



# STIC Search Report

## EIC 1700

STIC Database Tracking Number: 196392

TO: Camie Thompson  
Location: REM 10D28  
Art Unit : 1774  
July 26, 2006

Case Serial Number: 10/792130

From: Les Henderson  
Location: EIC 1700  
REMSSEN 4B30  
Phone: 571/272-2538  
Leslie.Henderson@uspto.gov

### Search Notes

JUL 25 1993

# SEARCH REQUEST FORM

Pat. & T.M. Office

Scientific and Technical Information Center

Requester's Full Name: Camie S. Thompson Examiner #: 19244 Date: 7/25/06  
Art Unit: 1224 Phone Number 301-272-1330 Serial Number: 10/192,130  
Mail Box and Bldg/Room Location: \_\_\_\_\_ Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: organic electroluminescent device  
Inventors (please provide full names): Jeong SEO; Hee Kim; KYONG LEE; HYOUNG OH;  
MYUNG KIM; CHUN PARK  
Earliest Priority Filing Date: 3/5/03

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

please do a search on claims 1-2; 4-10

Chemical formula 1 - depart or guest  
wherein A, A<sub>2</sub> can be an aromatic  
group, heterocyclic group,  
aliphatic group

formula 1  
formula 2

formula 2 - host material  
B1-X-B2

B1, B2: aryl, arylalkyl, alkyl,  
alkoxyaryl, arylalkyl,  
phenyl, phenylalkyl,  
isopropyl, n-propyl

Thanks,

X → naphthalene, fluorene,  
anthracene, phenanthrene, triphenylamine, quinuclidine,  
isopropyl

## STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>24</u>	NA Sequence (#) _____	STN <u>\$ 1209.72</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>3</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>7/26/06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>30</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>20</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>240</u>	Other _____	Other (specify) _____



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713  
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

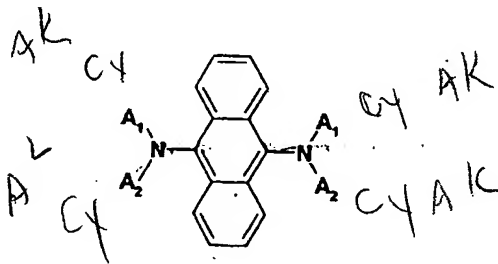
1. (Currently Amended) An organic electroluminescent device, comprising:

a substrate;

first First and second electrodes formed on the substrate; and

a light-emitting layer formed between the first electrode and the second electrode, the light-emitting layer containing having a plurality of materials and being a green luminescent material represented by using a chemical formula 1 as a dopant[[.]] :

[Chemical formula 1]



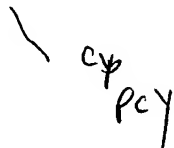
wherein ~~Wherein~~, at least one of A1 and A2 is selected from a substituted or non-substituted aromatic group, a substituted or non-substituted [[a]] heterocyclic group, a substituted or non-substituted [[an]] aliphatic group and hydrogen,

wherein the light-emitting layer further contains a host material represented by a chemical formula

2:

[Chemical formula 2]

B1-X-B2





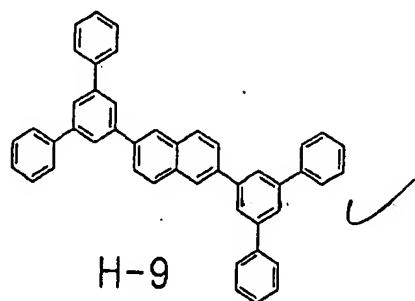
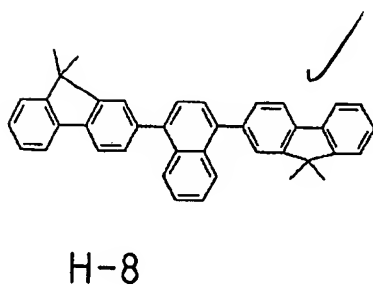
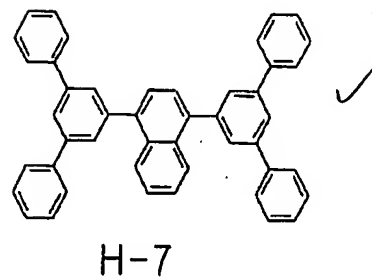
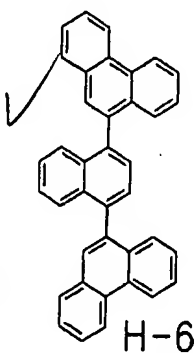
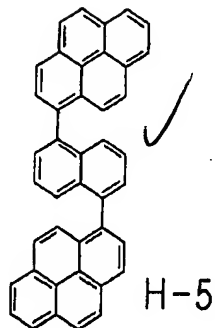
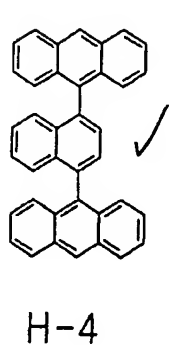
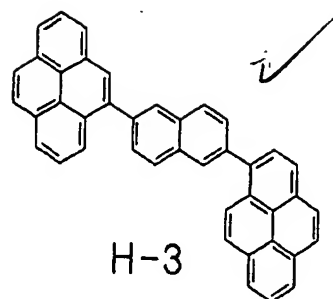
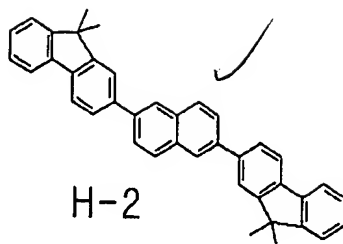
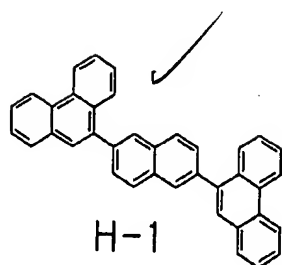
<sup>45 46 47 48 49</sup>  
<sup>L42 43 44</sup>  
 wherein the X is selected from the group consisting of naphthalene, fluorene, anthracene,  
 phenanthrene, pyrene, perylene, quinoline, and isoquinoline and B1 and B2 are individually selected from  
 a group consisting of aryl, alkylaryl, alkoxyaryl, arylallyl, pyridyl, quinolyl, isoquinolyl and hydrogen.

2. (Original) The organic electroluminescent device of claim 1, wherein wt. % of the material in the chemical formula 1 is 0.1 - 49.9wt.% of a total weight of the luminescent layer.

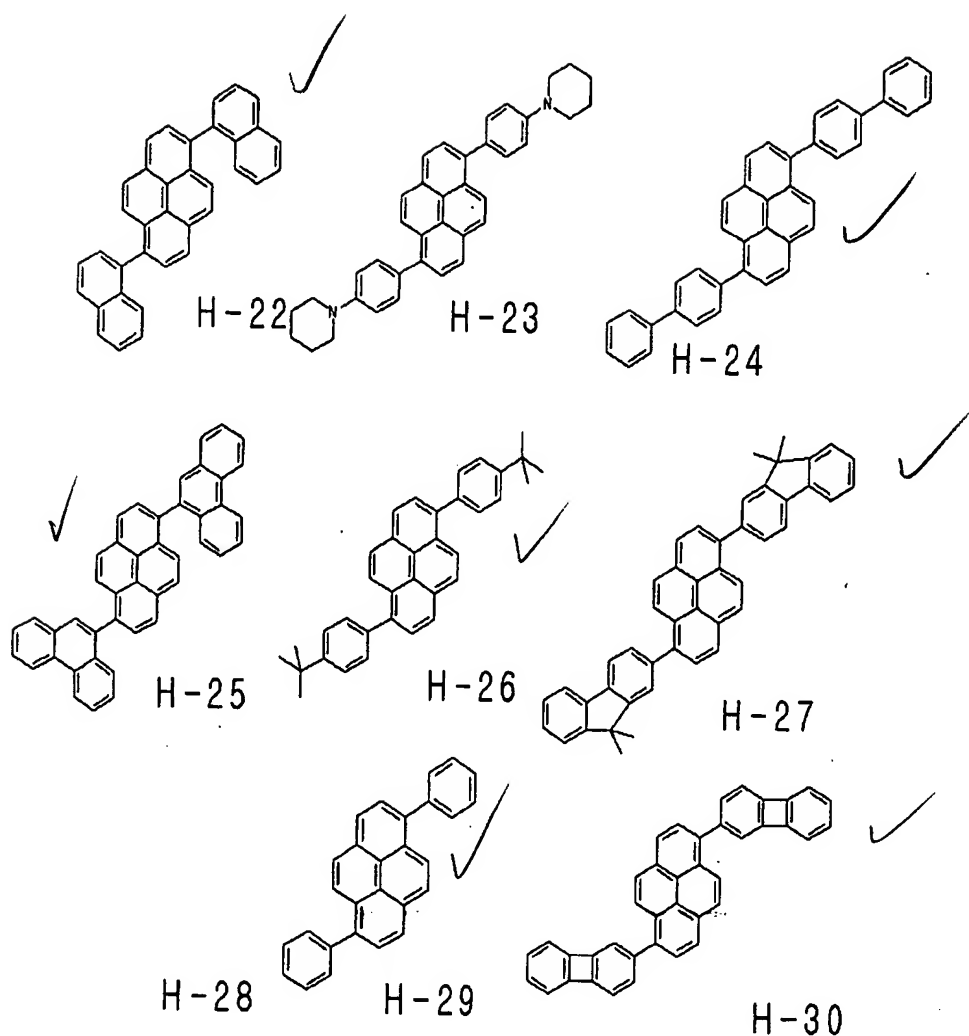
3. (Canceled)

4. (Currently Amended) The organic electroluminescent device of claim 1 [[3]], wherein [[and]]  
 at least one of the B1 and B2 is selected from the group consisting of phenyl, biphenyl, pyridyl, naphthyl,  
 tritylphenyl, biphenylenyl, anthryl, phenanthryl, pyrenyl, perylenyl, quinolyl, isoquinolyl, fluorenyl,  
 terphenyl, tolyl, xylyl, methylnaphthyl, and hydrogen.

5. (Currently Amended) The organic electroluminescent device of claim 1, wherein the host material forming the light emitting layer together with the material of the chemical formula 1 is one of following formulas[[.]]:







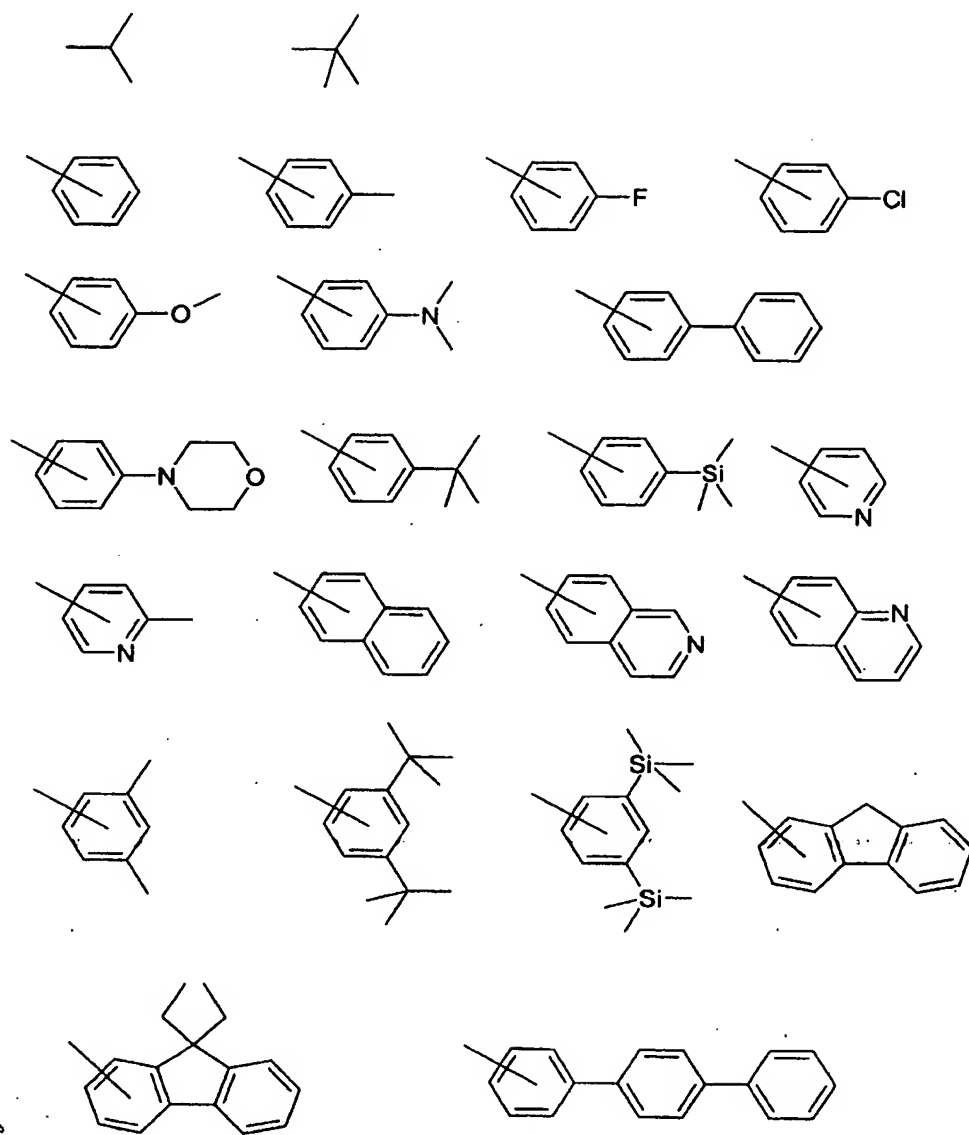
6. (Original) The organic electroluminescent device of claim 1, wherein at least one of the A1 and A2 is selected from phenyl, biphenyl, pyridyl, naphthyl, quinolyl, isoquinolyl, fluorenyl, terphenyl, methyl, ethyl, propyl, i-propyl, and t-butyl.

7. (Currently Amended) The organic electroluminescent device of claim 1, wherein a substituent of each substituted A1 and A2 is at least one [[and]] selected from the group consisting of alkyl, aryl, alkoxy, alkylamino, halogen, aryloxy, arylamino, alkylsilyl, arylsilyl and hydrogen.

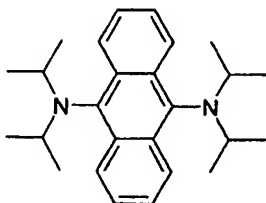
8. **(Original)** The organic electroluminescent device of claim 7, wherein the substituent is one selected from methyl, ethyl, propyl, i-propyl, t-butyl, cyclohexyl, methoxy, ethoxy, propoxy, butoxy, dimethylamino, trimethylsilyl, fluorine, chloro, phenoxy, tolyloxy, dimethylamino, diethylamino, diphenylamino, and triphenylsilyl.

9. **(Currently Amended)** The organic electroluminescent device of claim 1, wherein at least one of the A1 and A2 is is ~~[[in]]~~ one of following chemical formulas~~[[.]]~~ :

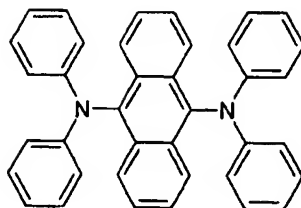
*cellulose*



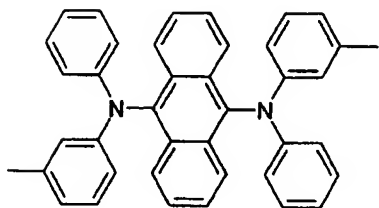
10. (Currently Amended) The organic electroluminescent device of claim 1, wherein the green luminescent material is at least one of following chemical formulas[[]] :



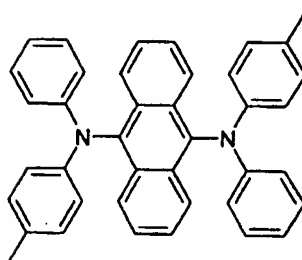
G-1



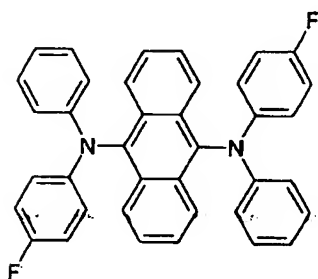
G-2



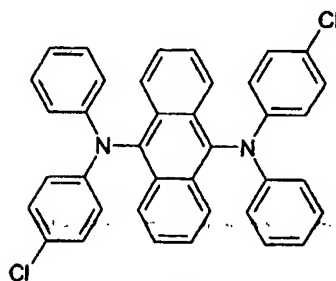
G-3



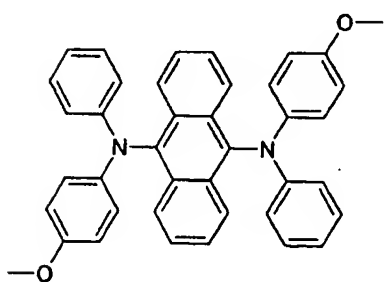
G-4



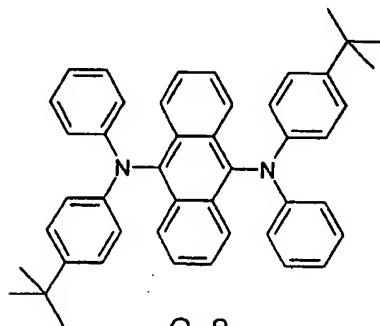
G-5



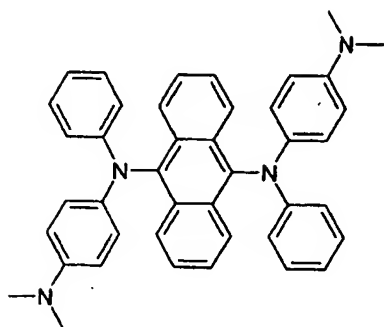
G-6



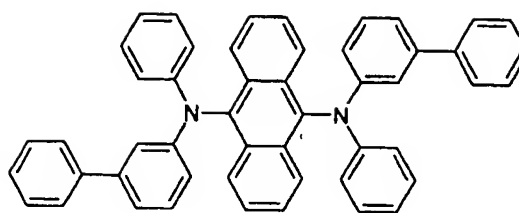
G-7



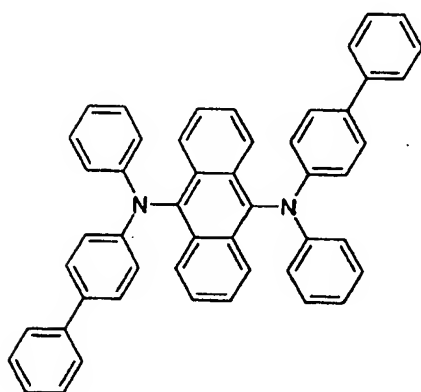
G-8



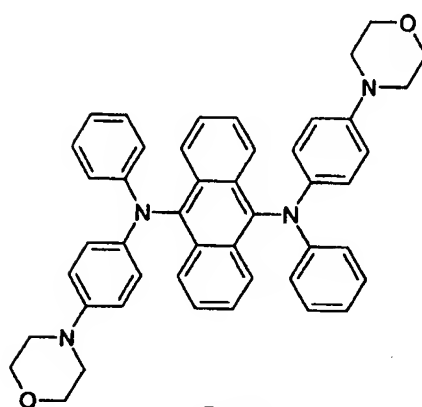
G-9



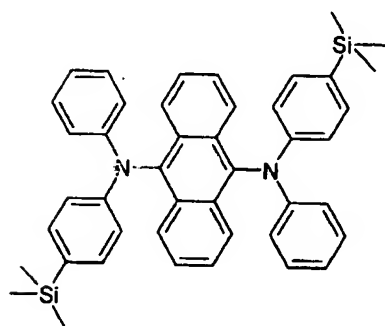
G-10



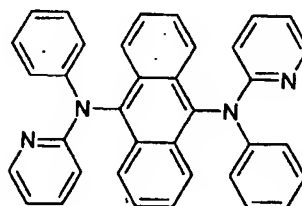
G-11



G-12

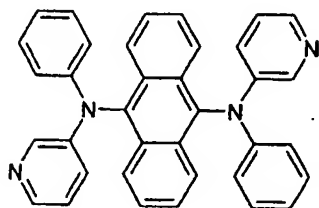


G-13

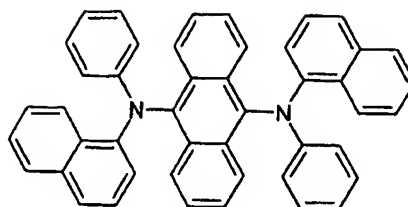


G-14

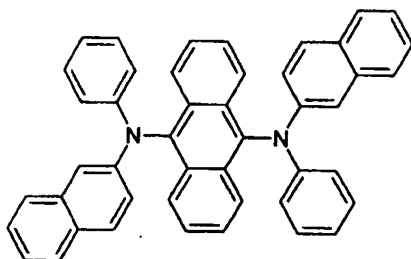




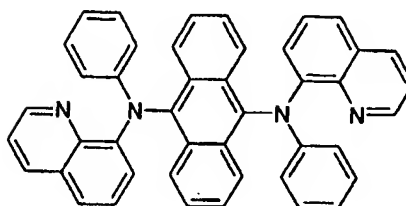
G-15



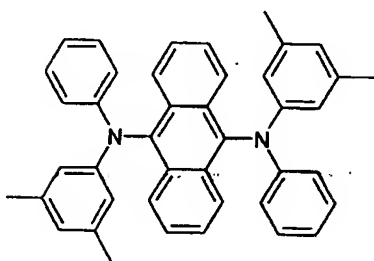
G-16



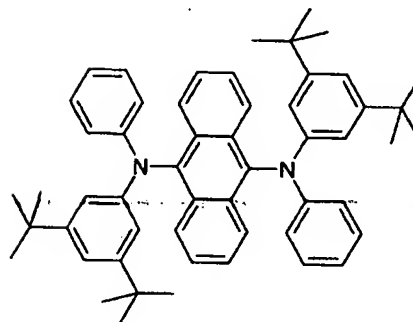
G-17



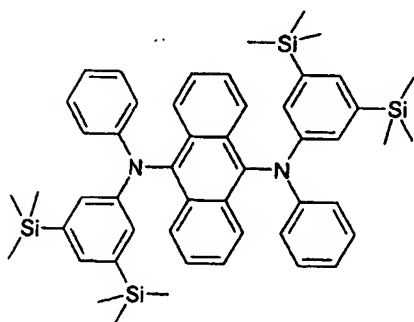
G-18



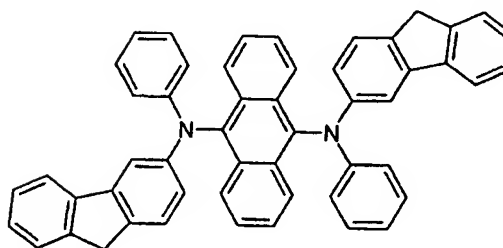
G-19



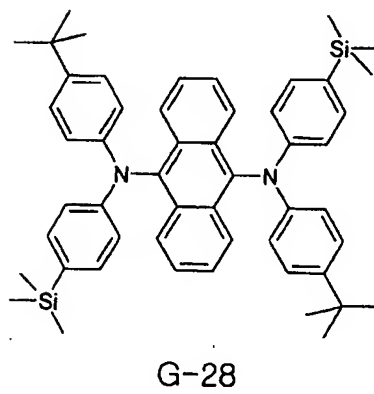
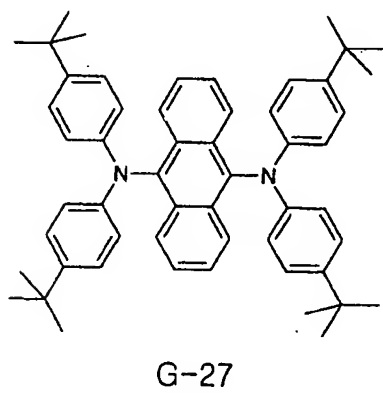
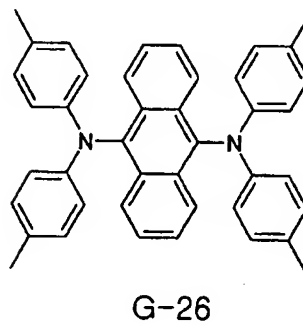
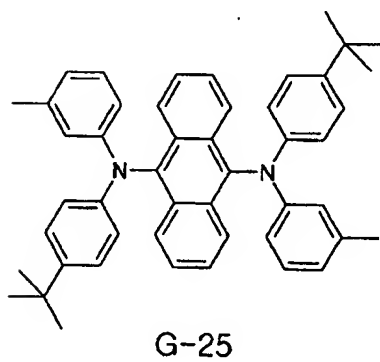
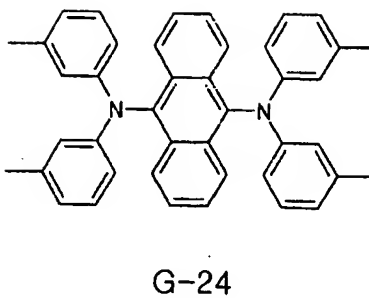
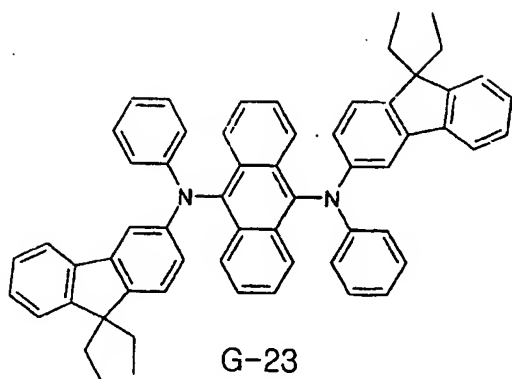
G-20

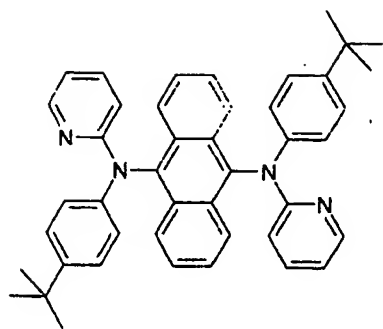


G-21

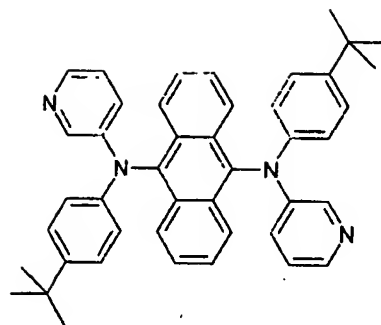


G-22

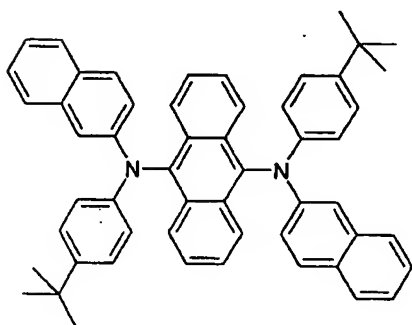




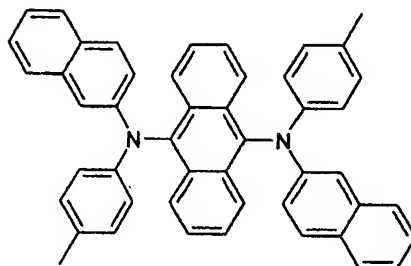
G-29



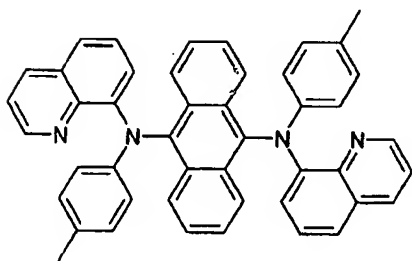
G-30



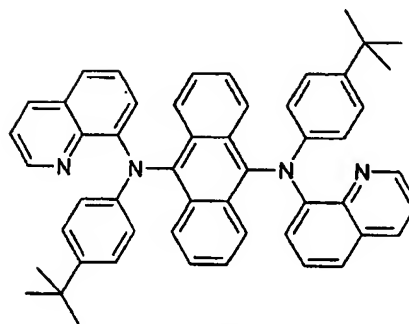
G-31



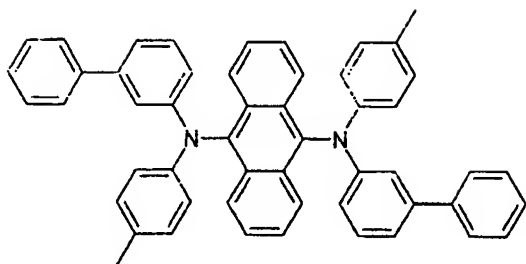
G-32



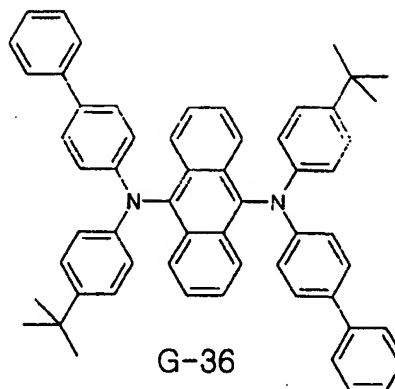
G-33



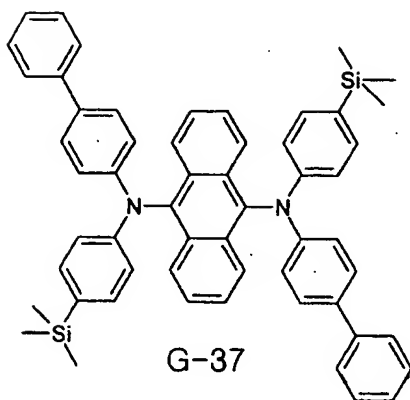
G-34



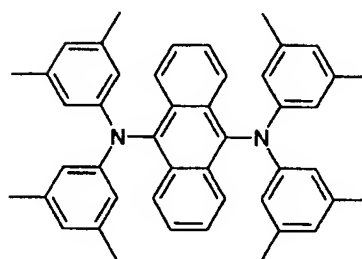
G-35



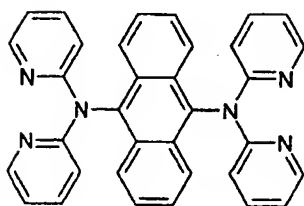
G-36



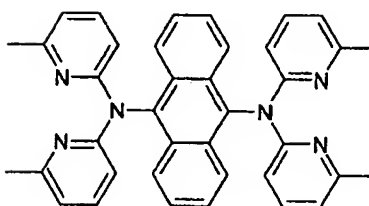
G-37



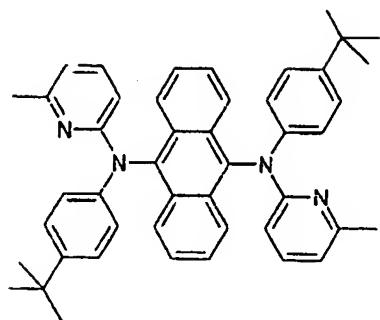
G-38



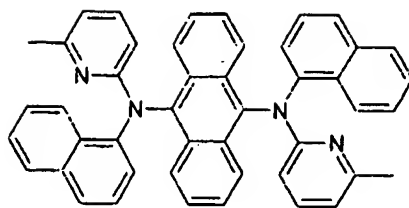
G-39



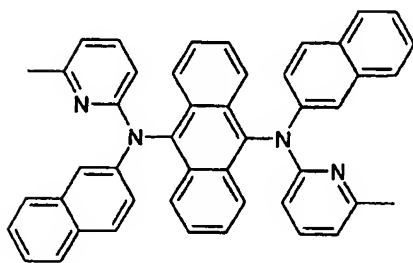
S-40



G-41



G-42



G-43

=> d his ful

(FILE 'HOME' ENTERED AT 13:56:11 ON 25 JUL 2006)

FILE 'HCAPLUS' ENTERED AT 13:56:29 ON 25 JUL 2006

E US20040209118/PN

L1 1 SEA ABB=ON PLU=ON US20040209118/PN  
D ALL  
SEL RN

FILE 'REGISTRY' ENTERED AT 13:57:16 ON 25 JUL 2006

L2 74 SEA ABB=ON PLU=ON (123847-85-8/BI OR 177799-11-0/BI  
OR 177799-14-3/BI OR 177799-16-5/BI OR 189263-81-8/BI  
OR 189263-82-9/BI OR 190974-21-1/BI OR 2085-33-8/BI OR  
26979-27-1/BI OR 331749-28-1/BI OR 400606-81-7/BI OR  
43069-36-9/BI OR 473717-08-7/BI OR 55009-75-1/BI OR  
626236-19-9/BI OR 653599-45-2/BI OR 653599-46-3/BI OR  
722498-56-8/BI OR 722498-57-9/BI OR 722498-58-0/BI OR  
722498-59-1/BI OR 722498-60-4/BI OR 722498-61-5/BI OR  
722498-62-6/BI OR 722498-63-7/BI OR 722498-64-8/BI OR  
722498-65-9/BI OR 722498-66-0/BI OR 722498-67-1/BI OR  
722498-68-2/BI OR 722498-69-3/BI OR 722498-70-6/BI OR  
722498-71-7/BI OR 722498-72-8/BI OR 722498-73-9/BI OR  
722498-74-0/BI OR 722498-75-1/BI OR 756899-41-9/BI OR  
756899-42-0/BI OR 756899-43-1/BI OR 756899-44-2/BI OR  
756899-45-3/BI OR 756899-46-4/BI OR 756899-47-5/BI OR  
756899-48-6/BI OR 756899-49-7/BI OR 756899-50-0/BI OR  
756899-51-1/BI OR 756899-52-2/BI OR 756899-53-3/BI OR  
756899-54-4/BI OR 756899-55-5/BI OR 756899-56-6/BI OR  
756899-57-7/BI OR 756899-58-8/BI OR 756899-59-9/BI OR  
756899-60-2/BI OR 756899-61-3/BI OR 756899-62-4/BI OR  
756899-63-5/BI OR 756899-64-6/BI OR 756899-65-7/BI OR  
756899-66-8/BI OR 756899-67-9/BI OR 756899-68-0/BI OR  
756899-69-1/BI OR 756899-70-4/BI OR 756899-71-5/BI OR  
756899-72-6/BI OR 756899-73-7/BI OR 756899-74-8/BI OR  
756899-75-9/BI OR 756899-76-0/BI OR 756899-77-1/BI)  
D SCAN

FILE 'LREGISTRY' ENTERED AT 14:05:33 ON 25 JUL 2006

L3 STR

FILE 'REGISTRY' ENTERED AT 14:13:54 ON 25 JUL 2006

L4 9 SEA SSS SAM L3  
D SCAN

D 1-3 STR RSD

L5 47 SEA ABB=ON PLU=ON L2 AND 2-6/N  
L6 38425 SEA ABB=ON PLU=ON 2508.17.56/RID  
L7 15850 SEA ABB=ON PLU=ON L6 AND 2-12/N  
L8 13983 SEA ABB=ON PLU=ON L6 AND 2-6/N

D QUE STAT L4

L9 268 SEA SSS FUL L3  
SAV L9 TH0130/A  
E PHENYLALLYL/CN  
E PHENYLALLYL?/CNS  
D E5-E6

L10 9 SEA ABB=ON PLU=ON (PHENYLALLYLAMINE/CNS OR PHENYLALLY  
LAMINO/CNS)  
E PHENYLALLYLNAPHTHALENE/CN

L11 43 SEA ABB=ON PLU=ON L9 AND L2

L12 31 SEA ABB=ON PLU=ON L2 NOT L11

FILE 'LREGISTRY' ENTERED AT 14:38:51 ON 25 JUL 2006

L13 STR

FILE 'REGISTRY' ENTERED AT 15:07:02 ON 25 JUL 2006

E PYRENE/CN

L14 1 SEA ABB=ON PLU=ON PYRENE/CN  
 D SCAN  
 D RN STR  
 E PERYLENE/CN  
 L15 1 SEA ABB=ON PLU=ON PERYLENE/CN  
 D RN STR  
  
 FILE 'LREGISTRY' ENTERED AT 15:08:54 ON 25 JUL 2006  
 L16 STR L13  
  
 FILE 'REGISTRY' ENTERED AT 15:21:11 ON 25 JUL 2006  
 L17 50 SEA SSS SAM L16  
  
 FILE 'LREGISTRY' ENTERED AT 15:21:46 ON 25 JUL 2006  
 L18 D QUE STAT  
 STR L16  
  
 FILE 'REGISTRY' ENTERED AT 15:23:22 ON 25 JUL 2006  
 L19 50 SEA SSS SAM L18  
 L20 2 SEA ABB=ON PLU=ON L12 AND NR>10  
 D SCAN  
 L21 SCR 1918 OR 2043  
 L22 SCR 1839  
 L23 50 SEA SSS SAM L18 AND L22 NOT L21  
 L24 SCR 1847  
 L25 50 SEA SSS SAM L18 AND L22 NOT (L21 OR L24)  
  
 FILE 'LREGISTRY' ENTERED AT 15:31:42 ON 25 JUL 2006  
 L26 STR L18  
  
 FILE 'REGISTRY' ENTERED AT 15:46:32 ON 25 JUL 2006  
 L27 0 SEA SSS SAM L26 AND L22 NOT (L21 OR L24)  
 L28 SCR 1121 OR 1045  
 L29 SCR 1847  
 L30 50 SEA SSS SAM L18 AND L22 AND L28 NOT (L21 OR L24 OR  
 L29)  
 D QUE STAT  
 L31 SCR 1841  
 L32 50 SEA SSS SAM L18 AND L31 AND L28 NOT (L21 OR L24 OR  
 L29)  
 L33 266392 SEA SSS FUL L18 AND L31 AND L28 NOT (L21 OR L24 OR  
 L29)  
 SAV TEMP L33 THO130A/A  
 L34 2903 SEA ABB=ON PLU=ON L33 AND ((C(L)H)/ELS(L)2/ELC.SUB)  
 L35 27 SEA ABB=ON PLU=ON L34 AND L2  
 L36 11 SEA ABB=ON PLU=ON L6 AND L35  
 L37 16 SEA ABB=ON PLU=ON L35 NOT L36  
 L38 72 SEA ABB=ON PLU=ON L33 AND L2  
 L39 31 SEA ABB=ON PLU=ON L38 AND 2/N  
 L40 18 SEA ABB=ON PLU=ON L39 AND 7/NR  
 L41 2 SEA ABB=ON PLU=ON L9 AND C14H12N2/MF  
 D SCAN  
 E NAPHTHALENE/CN  
 L42 1 SEA ABB=ON PLU=ON NAPHTHALENE/CN  
 E FLUORENE/CN  
 L43 1 SEA ABB=ON PLU=ON FLUORENE/CN  
 E ANTHRACENE/CN  
 L44 1 SEA ABB=ON PLU=ON ANTHRACENE/CN  
 E PHENANTHRENE/CN  
 L45 1 SEA ABB=ON PLU=ON PHENANTHRENE/CN  
 E PYRENE/CN  
 L46 1 SEA ABB=ON PLU=ON PYRENE/CN  
 E PERYLENE/CN  
 L47 1 SEA ABB=ON PLU=ON PERYLENE/CN  
 E QUINOLINE/CN  
 L48 1 SEA ABB=ON PLU=ON QUINOLINE/CN

D SCAN  
 E ISOQUINOLINE/CN  
 L49 1 SEA ABB=ON PLU=ON ISOQUINOLINE/CN  
 D SCAN

FILE 'LREGISTRY' ENTERED AT 16:40:27 ON 25 JUL 2006  
 L50 STR L18

FILE 'REGISTRY' ENTERED AT 17:22:32 ON 25 JUL 2006  
 L51 50 SEA SUB=L33 SSS SAM L50  
 L52 265886 SEA SUB=L33 SSS FUL L50  
 L53 9740 SEA ABB=ON PLU=ON L52 AND ((C(L)H(L)N)/ELS(L)3/ELC.SUB)  
 SAV L53 THO130B/A  
 L54 3208 SEA ABB=ON PLU=ON L52 AND ((C(L)H(L)N(L)X)/ELS(L)4/ELC.SUB)  
 L55 4 SEA ABB=ON PLU=ON L2 AND 1-4/SI  
 D SCAN  
 L56 4 SEA ABB=ON PLU=ON L55 AND L33  
 SAV L56 THO130C/A  
 L57 73465 SEA ABB=ON PLU=ON L33 AND ((C(L)H(L)N(L)O)/ELS(L)4/ELC.SUB)  
 SAV L57 THO130D/A  
 L58 177076 SEA ABB=ON PLU=ON L33 NOT (L34 OR L53 OR L54 OR L57)  
 L59 105392 SEA ABB=ON PLU=ON L58 AND 4-5/NR  
 L60 71684 SEA ABB=ON PLU=ON L58 NOT L59

FILE 'REGISTRY' ENTERED AT 17:41:16 ON 25 JUL 2006

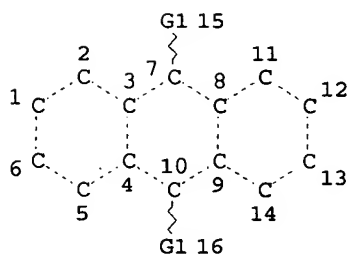
FILE 'HCAPLUS' ENTERED AT 17:41:23 ON 25 JUL 2006  
 L61 145 SEA ABB=ON PLU=ON L9  
 L62 27 SEA ABB=ON PLU=ON L11  
 L63 6223 SEA ABB=ON PLU=ON L12  
 L64 12 SEA ABB=ON PLU=ON L63 AND L62  
 L65 62 SEA ABB=ON PLU=ON L35  
 L66 4 SEA ABB=ON PLU=ON L65 AND L61  
 L67 3906 SEA ABB=ON PLU=ON L34  
 L68 18 SEA ABB=ON PLU=ON L61 AND L67  
 L69 27 SEA ABB=ON PLU=ON L41  
 L70 41727 SEA ABB=ON PLU=ON L42 OR NAPHTHALENE  
 L71 23225 SEA ABB=ON PLU=ON L43 OR FLUORENE  
 L72 55974 SEA ABB=ON PLU=ON L44 OR ANTHRACENE  
 L73 33603 SEA ABB=ON PLU=ON L45 OR PHENANTHRENE  
 L74 46694 SEA ABB=ON PLU=ON L46 OR PYRENE  
 L75 16388 SEA ABB=ON PLU=ON L47 OR PERYLENE  
 L76 51628 SEA ABB=ON PLU=ON L48 OR QUINOLINE  
 L77 18369 SEA ABB=ON PLU=ON L49 OR ISOQUINOLINE  
 L78 8431 SEA ABB=ON PLU=ON L53  
 L79 2555 SEA ABB=ON PLU=ON L54  
 L80 1 SEA ABB=ON PLU=ON L56  
 L81 21407 SEA ABB=ON PLU=ON L59  
 L82 22325 SEA ABB=ON PLU=ON L60  
 L83 77 SEA ABB=ON PLU=ON (L9 OR L69) AND (L67 OR (L70 OR L71 OR L72 OR L73 OR L74 OR L75 OR L76 OR L77))  
 L84 83 SEA ABB=ON PLU=ON (L9 OR L69) AND (L78 OR L79 OR L80)  
 L85 26 SEA ABB=ON PLU=ON (L9 OR L69) AND ((L81 OR L82))  
 D QUE STAT L\*\*\*  
 L86 19317 SEA ABB=ON PLU=ON L57  
 L87 38 SEA ABB=ON PLU=ON (L9 OR L69) AND L86  
 L88 742815 SEA ABB=ON PLU=ON EL OR E(W)L OR ELECTROLUMIN? OR ORGANOLUMIN? OR (ELECTRO OR ORGANO OR ORG#) (2A) LUMIN? OR LIGHT? (2A) (EMIT? OR EMISSION? OR SOURCE?) OR LUMINES##### OR FLUORES?  
 D QUE  
 L89 47 SEA ABB=ON PLU=ON L83 AND L88



L90 11 SEA ABB=ON PLU=ON L64 AND L88  
 L91 72 SEA ABB=ON PLU=ON L88 AND (L64 OR L66 OR L66 OR L68  
 OR (L83 OR L84 OR L85) OR L87)  
 L92 78 SEA ABB=ON PLU=ON L83 OR L64 OR L66 OR L68  
 L93 48 SEA ABB=ON PLU=ON L92 AND L88  
 L94 43 S L93 AND 1907-2004/PY,PYR

=> => d que stat l94

L2 74 SEA FILE=REGISTRY ABB=ON PLU=ON (123847-85-8/BI OR  
 177799-11-0/BI OR 177799-14-3/BI OR 177799-16-5/BI OR  
 189263-81-8/BI OR 189263-82-9/BI OR 190974-21-1/BI OR  
 2085-33-8/BI OR 26979-27-1/BI OR 331749-28-1/BI OR  
 400606-81-7/BI OR 43069-36-9/BI OR 473717-08-7/BI OR  
 55009-75-1/BI OR 626236-19-9/BI OR 653599-45-2/BI OR  
 653599-46-3/BI OR 722498-56-8/BI OR 722498-57-9/BI OR  
 722498-58-0/BI OR 722498-59-1/BI OR 722498-60-4/BI OR  
 722498-61-5/BI OR 722498-62-6/BI OR 722498-63-7/BI OR  
 722498-64-8/BI OR 722498-65-9/BI OR 722498-66-0/BI OR  
 722498-67-1/BI OR 722498-68-2/BI OR 722498-69-3/BI OR  
 722498-70-6/BI OR 722498-71-7/BI OR 722498-72-8/BI OR  
 722498-73-9/BI OR 722498-74-0/BI OR 722498-75-1/BI OR  
 756899-41-9/BI OR 756899-42-0/BI OR 756899-43-1/BI OR  
 756899-44-2/BI OR 756899-45-3/BI OR 756899-46-4/BI OR  
 756899-47-5/BI OR 756899-48-6/BI OR 756899-49-7/BI OR  
 756899-50-0/BI OR 756899-51-1/BI OR 756899-52-2/BI OR  
 756899-53-3/BI OR 756899-54-4/BI OR 756899-55-5/BI OR  
 756899-56-6/BI OR 756899-57-7/BI OR 756899-58-8/BI OR  
 756899-59-9/BI OR 756899-60-2/BI OR 756899-61-3/BI OR  
 756899-62-4/BI OR 756899-63-5/BI OR 756899-64-6/BI OR  
 756899-65-7/BI OR 756899-66-8/BI OR 756899-67-9/BI OR  
 756899-68-0/BI OR 756899-69-1/BI OR 756899-70-4/BI OR  
 756899-71-5/BI OR 756899-72-6/BI OR 756899-73-7/BI OR  
 756899-74-8/BI OR 756899-75-9/BI OR 756899-76-0/BI OR  
 756899-77-1/BI)  
 L3 STR



NH~G2  
 @17 18

G2~N~G2  
 19 @20 21

Ak @22 Cy @2

Page 1-A

3

Page 1-B

VAR G1=NH2/17/20

VAR G2=22/23

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 23

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC 8

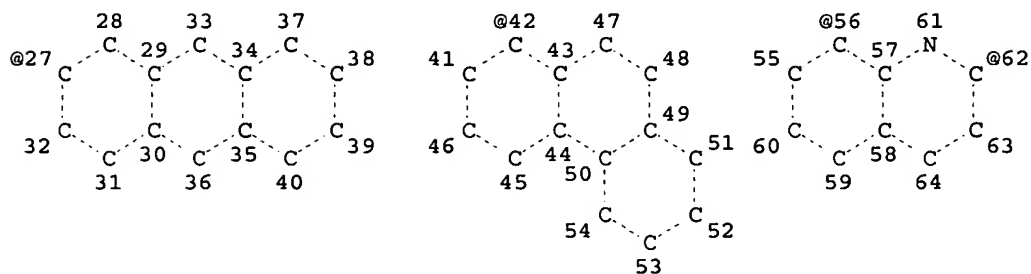
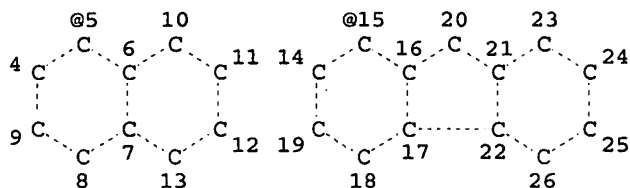
NUMBER OF NODES IS 23

STEREO ATTRIBUTES: NONE

L9 268 SEA FILE=REGISTRY SSS FUL L3

L11 43 SEA FILE=REGISTRY ABB=ON PLU=ON L9 AND L2  
 L12 31 SEA FILE=REGISTRY ABB=ON PLU=ON L2 NOT L11  
 L18 STR

G2 1 G1 2 G2 3



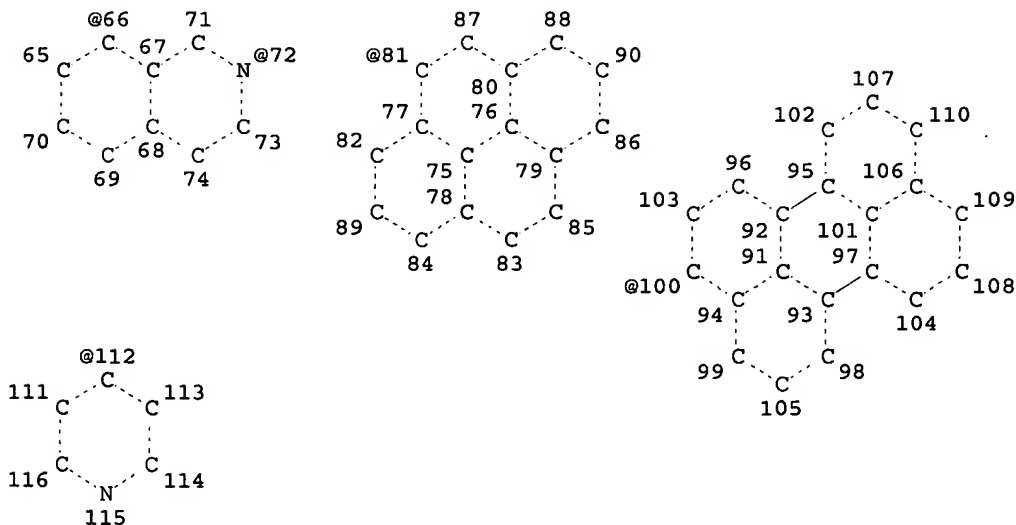
Ch @117 Ak ~ Cb Cb ~ C ~ C ~ C Ak ~ O ~ Cb  
 118@119 122 123 124@125 126 120@121

Page 1-A

4

5

Page 1-B



Page 2-A

VAR G1=5/15/27/42/56/66/81/100  
 VAR G2=62/72/117/119/125/121/112

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 117

GGCAT IS UNS AT 119  
GGCAT IS UNS AT 121  
GGCAT IS UNS AT 122  
DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 126

## STEREO ATTRIBUTES: NONE

L21 SCR 1918 OR 2043  
L24 SCR 1847  
L28 SCR 1121 OR 1045  
L29 SCR 1847  
L31 SCR 1841  
L33 266392 SEA FILE=REGISTRY SSS FUL L18 AND L31 AND L28 NOT (L21  
OR L24 OR L29)  
L34 2903 SEA FILE=REGISTRY ABB=ON PLU=ON L33 AND ((C(L)H)/ELS(  
L)2/ELC.SUB)  
L35 27 SEA FILE=REGISTRY ABB=ON PLU=ON L34 AND L2  
L41 2 SEA FILE=REGISTRY ABB=ON PLU=ON L9 AND C14H12N2/MF  
L42 1 SEA FILE=REGISTRY ABB=ON PLU=ON NAPHTHALENE/CN  
L43 1 SEA FILE=REGISTRY ABB=ON PLU=ON FLUORENE/CN  
L44 1 SEA FILE=REGISTRY ABB=ON PLU=ON ANTHRACENE/CN  
L45 1 SEA FILE=REGISTRY ABB=ON PLU=ON PHENANTHRENE/CN  
L46 1 SEA FILE=REGISTRY ABB=ON PLU=ON PYRENE/CN  
L47 1 SEA FILE=REGISTRY ABB=ON PLU=ON PERYLENE/CN  
L48 1 SEA FILE=REGISTRY ABB=ON PLU=ON QUINOLINE/CN  
L49 1 SEA FILE=REGISTRY ABB=ON PLU=ON ISOQUINOLINE/CN  
L61 145 SEA FILE=HCAPLUS ABB=ON PLU=ON L9  
L62 27 SEA FILE=HCAPLUS ABB=ON PLU=ON L11  
L63 6223 SEA FILE=HCAPLUS ABB=ON PLU=ON L12  
L64 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L63 AND L62  
L65 62 SEA FILE=HCAPLUS ABB=ON PLU=ON L35  
L66 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L65 AND L61  
L67 3906 SEA FILE=HCAPLUS ABB=ON PLU=ON L34  
L68 18 SEA FILE=HCAPLUS ABB=ON PLU=ON L61 AND L67  
L69 27 SEA FILE=HCAPLUS ABB=ON PLU=ON L41  
L70 41727 SEA FILE=HCAPLUS ABB=ON PLU=ON L42 OR NAPHTHALENE  
L71 23225 SEA FILE=HCAPLUS ABB=ON PLU=ON L43 OR FLUORENE  
L72 55974 SEA FILE=HCAPLUS ABB=ON PLU=ON L44 OR ANTHRACENE  
L73 33603 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 OR PHENANTHRENE  
L74 46694 SEA FILE=HCAPLUS ABB=ON PLU=ON L46 OR PYRENE  
L75 16388 SEA FILE=HCAPLUS ABB=ON PLU=ON L47 OR PERYLENE  
L76 51628 SEA FILE=HCAPLUS ABB=ON PLU=ON L48 OR QUINOLINE  
L77 18369 SEA FILE=HCAPLUS ABB=ON PLU=ON L49 OR ISOQUINOLINE  
L83 77 SEA FILE=HCAPLUS ABB=ON PLU=ON (L9 OR L69) AND (L67  
OR (L70 OR L71 OR L72 OR L73 OR L74 OR L75 OR L76 OR  
L77))  
L88 742815 SEA FILE=HCAPLUS ABB=ON PLU=ON EL OR E(W)L OR  
ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO OR  
ORG#) (2A) LUM!N? OR LIGHT? (2A) (EMIT? OR EMISSION? OR  
SOURCE?) OR LUMINES##### OR FLUORES?  
L92 78 SEA FILE=HCAPLUS ABB=ON PLU=ON L83 OR L64 OR L66 OR  
L68  
L93 48 SEA FILE=HCAPLUS ABB=ON PLU=ON L92 AND L88  
L94 43 SEA FILE=HCAPLUS ABB=ON PLU=ON L93 AND 1907-2004/PY,P  
YR

=&gt; d 194 1-43 ibib abs hitstr hitind

L94 ANSWER 1 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:913995 HCAPLUS

DOCUMENT NUMBER: 142:113757

TITLE: Process for preparation of anthracene

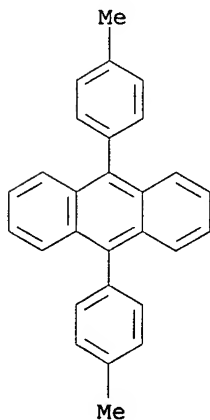
INVENTOR(S): derivatives  
Choi, Seok Gyu; Kim, Hyeong Gwon; Lee, Seung  
Jae; Park, No Hun; Song, Won Jun; Yoo, Si  
Cheol; Yoo, Si Man  
PATENT ASSIGNEE(S): BES Co., Ltd., S. Korea  
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp.  
given  
CODEN: KRXXA7  
DOCUMENT TYPE: Patent  
LANGUAGE: Korean  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
KR 2002011686	A	20020209	KR 2000-45109	2000 0803

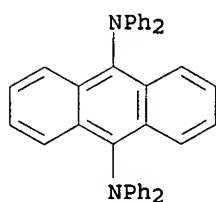
PRIORITY APPLN. INFO.: <--  
KR 2000-45109  
2000  
0803

AB Provided are **electro-luminescent anthracene** derivs. emitting blue or bluish green light with excellent brightness, which can be used for **electro-luminescent** elements or dyes. The **anthracene** derivs. represented by the formula 1 are produced by reacting 9,10-dibromoanthracene and carbazole or di-Ph amine or by reacting **anthracene** diboronic ester and p-bromo Me benzene. The **anthracene** derivs. are 9,10-dicarbazole **anthracene**, 9,10-N,N'-diphenyl amine **anthracene**, or 9,10-dimethyl Ph **anthracene**. In the formula, R1 and R2 are carbazole, di-Ph amine, or C1-C4 alkyl phenylene.

IT 43217-31-8P 177799-11-0P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation of **anthracene** derivs. with **electro-luminescent**)  
RN 43217-31-8 HCAPLUS  
CN Anthracene, 9,10-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 177799-11-0 HCAPLUS  
CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



IC ICM C07C015-28  
 CC 25-27 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 ST anthracene deriv prepn  
 IT Luminescence, electroluminescence  
 (of anthracene derivs.)  
 IT 86-74-8, Carbazole 122-39-4, Diphenyl amine, reactions  
 523-27-3, 9,10-Dibromoanthracene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (of anthracene derivs.)  
 IT 106-38-7, p-Bromomethylbenzene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of anthracene derivs.)  
 IT 43217-31-8P 90511-25-4P 177799-11-0P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation of anthracene derivs. with electro-  
 luminescent)

L94 ANSWER 2 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:902330 HCAPLUS  
 DOCUMENT NUMBER: 141:386152  
 TITLE: Aromatic amine derivative and organic  
 electroluminescent device employing  
 the same  
 INVENTOR(S): Funahashi, Masakazu  
 PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 43 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004092111	A1	20041028	WO 2004-JP140	2004 0113

<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
 CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
 KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
 MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL,  
 PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
 TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW,  
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY,  
 CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,  
 NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,  
 GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1612202	A1	20060104	EP 2004-701680
------------	----	----------	----------------

2004

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, HU, SK  
CN 1768029 A 20060503 CN 2004-80008768

0113

2004

0113

PRIORITY APPLN. INFO.:

JP 2003-106231

A

2003

0410

WO 2004-JP140

W

2004

0113

OTHER SOURCE(S): MARPAT 141:386152

AB Disclosed is an aromatic amine derivative having a specific structure comprising a substituted **anthracene** structure and connected thereto an amine structure substituted by a substituted benzene ring; and an organic **electroluminescent** device comprising a cathode, an anode, and  $\geq 1$  thin organic film layers sandwiched therebetween which comprise at least a **luminescent** layer, wherein at least 1 of the thin organic film layers consists only of the aromatic amine derivative or contains the derivative as a component of a mixture. The device is high in luminance and **luminescence** efficiency and has a long life. The aromatic amine derivative is a novel 1 which realizes the device.

IT 668020-34-6P 782504-30-7P 782504-31-8P

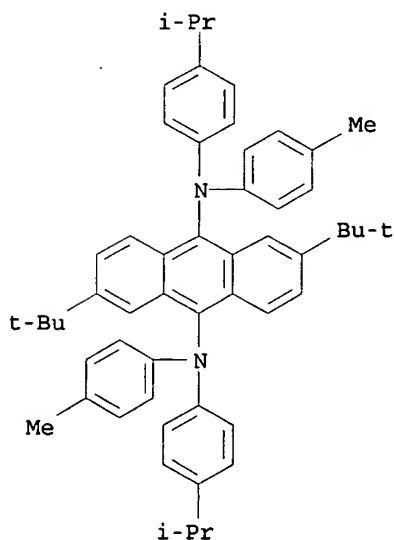
782504-32-9P 782504-34-1P 782504-36-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(aromatic amine derivative for organic **electroluminescent** device)

RN 668020-34-6 HCAPLUS

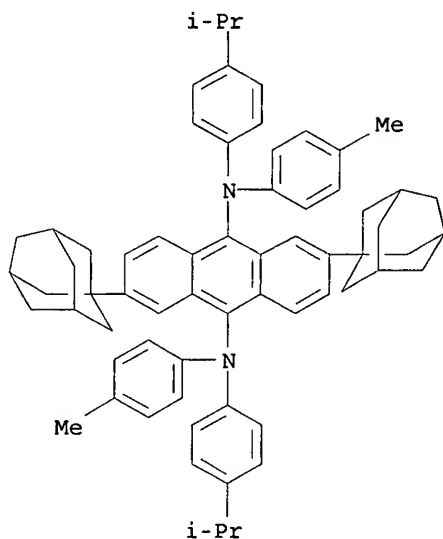
CN 9,10-Anthracenediamine, 2,6-bis(1,1-dimethylethyl)-N,N'-bis[4-(1-methylethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 782504-30-7 HCAPLUS

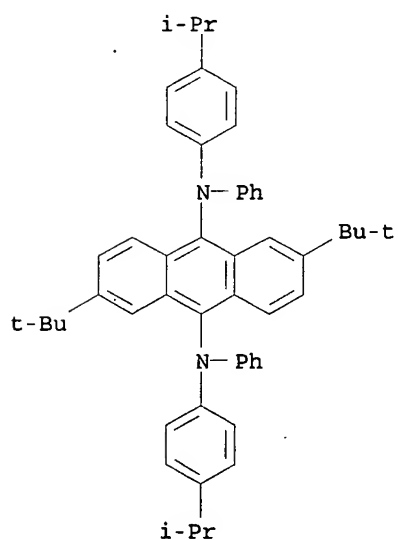
CN 9,10-Anthracenediamine, N,N'-bis[4-(1-methylethyl)phenyl]-N,N'-bis(4-methylphenyl)-2,6-bis(tricyclo[3.3.1.1.3,7]dec-1-yl)- (9CI)

(CA INDEX NAME)



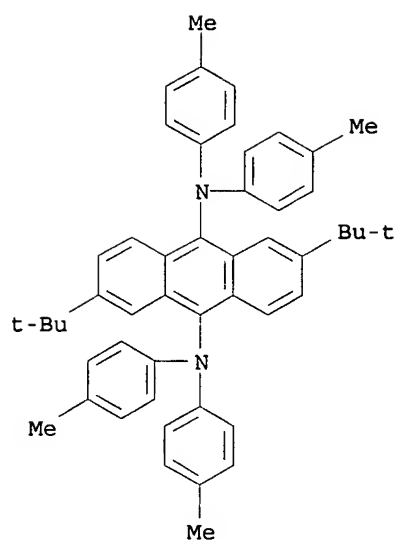
RN 782504-31-8 HCAPLUS

CN 9,10-Anthracenediamine, 2,6-bis(1,1-dimethylethyl)-N,N'-bis[4-(1-methylethyl)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)

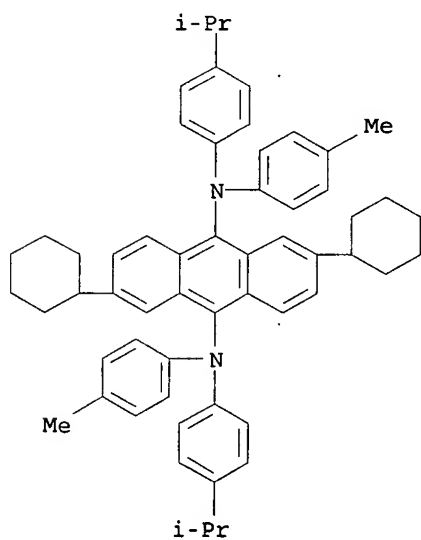


RN 782504-32-9 HCAPLUS

CN 9,10-Anthracenediamine, 2,6-bis(1,1-dimethylethyl)-N,N,N',N'-tetrakis(4-methylphenyl)- (9CI) (CA INDEX NAME)

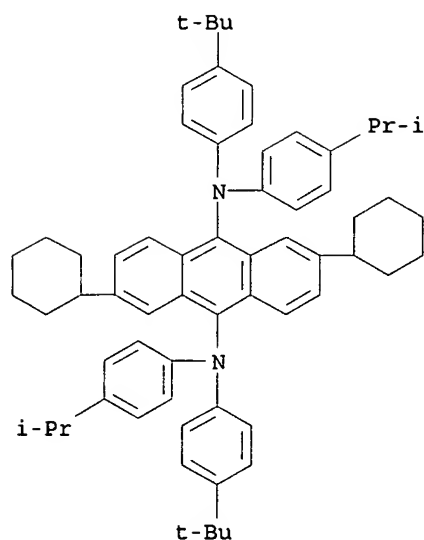


RN 782504-34-1 HCAPLUS  
 CN 9,10-Anthracenediamine, 2,6-dicyclohexyl-N,N'-bis[4-(1-methylethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 782504-36-3 HCAPLUS  
 CN 9,10-Anthracenediamine, 2,6-dicyclohexyl-N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-bis[4-(1-methylethyl)phenyl]- (9CI) (CA INDEX NAME)





IC ICM C07C211-61  
ICS C09K011-06; H05B033-14; H05B033-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 74  
ST arom amine deriv org **electroluminescent** device  
IT **Electroluminescent** devices  
(aromatic amine derivative for organic **electroluminescent** device)  
IT Amines, uses  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(aromatic; aromatic amine derivative for organic **electroluminescent** device)  
IT **Luminescent** substances  
(**electroluminescent**; aromatic amine derivative for organic **electroluminescent** device)  
IT 668020-34-6P 782504-30-7P 782504-31-8P  
782504-32-9P 782504-34-1P 782504-36-3P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(aromatic amine derivative for organic **electroluminescent** device)  
IT 620-93-9 5650-10-2, 4-Isopropylidiphenylamine 62375-58-0, 2,6-Di(tert-butyl)anthracene 77074-17-0 494834-22-9 782504-33-0 782504-35-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(aromatic amine derivative for organic **electroluminescent** device)  
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L94 ANSWER 3 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2004:756795 HCAPLUS  
DOCUMENT NUMBER: 141:285537  
TITLE: Organic **electroluminescent** device employing a derivative of 9,10-diaminoanthracene as a green **luminescent** dopant  
INVENTOR(S): Seo, Jeong Dae; Kim, Hee Jung; Lee, Kyung Hoon; Oh, Hyoung Yun; Kim, Myung Seop; Park,

PATENT ASSIGNEE(S): Chun Gun  
SOURCE: LG Electronics Inc., S. Korea  
PCT Int. Appl., 35 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

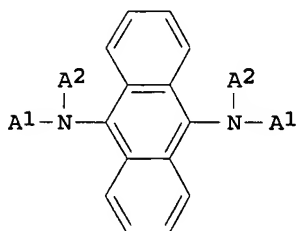
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004078872	A2	20040916	WO 2004-KR472	2004 0305

WO 2004078872 A3 20041216  
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG,  
ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,  
MK, MN, MW, MX, MZ, NA, NI, NO  
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW,  
AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF,  
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
US 2004209118 A1 20041021 US 2004-792130  
2004  
0304

EP 1603990 A2 20051214 EP 2004-717900  
2004  
0305  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, HU, PL, SK  
CN 1771313 A 20060510 CN 2004-80009251  
2004  
0305

PRIORITY APPLN. INFO.: KR 2003-13700 A  
2003  
0305  
KR 2003-20468 A  
2003  
0401  
WO 2004-KR472 W  
2004  
0305

OTHER SOURCE(S): MARPAT 141:285537  
GI



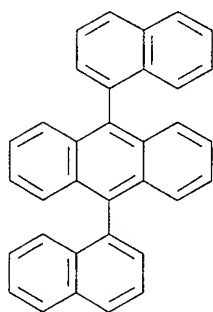
AB Organic electroluminescent devices (OLEDs) are described which comprise a substrate; a first and second electrodes formed on the substrate; and a light-emitting layer formed between the first electrode and the second electrode, with the light-emitting layer having a plurality of materials and being a green luminescent material using a dopant with chemical formula I where at least one of A1 and A2 is selected from a substituted or non-substituted aromatic group, a heterocyclic group, an aliphatic group and hydrogen. The materials forming the light-emitting layer together with the material of chemical formula (I) may have the formula B1-X-B2 where X is selected from naphthalene, fluorine, anthracene, phenanthrene, pyrene, perylene, quinoline, and isoquinoline; and at least one of B1 and B2 is selected from aryl, alkylaryl, alkoxyaryl, arylaminoaryl, alkylamino, and arylallyl.

IT 26979-27-1 43069-36-9 55009-75-1  
 331749-28-1 400606-81-7 626236-19-9  
 653599-45-2 653599-46-3 722498-56-8  
 722498-57-9 722498-58-0 722498-59-1  
 722498-60-4 722498-61-5 722498-62-6  
 722498-64-8 722498-65-9 722498-66-0  
 722498-67-1 722498-68-2 722498-69-3  
 722498-70-6 722498-71-7 722498-72-8  
 722498-73-9 722498-74-0 722498-75-1  
 756899-77-1

RL: DEV (Device component use); USES (Uses)  
 (light-emitting host; organic  
 electroluminescent device employing derivative of  
 9,10-diaminoanthracene as green luminescent dopant)

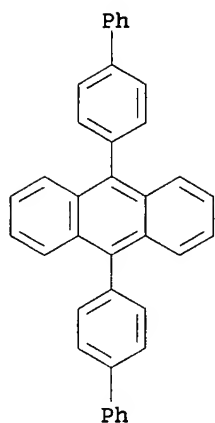
RN 26979-27-1 HCAPLUS

CN Anthracene, 9,10-di-1-naphthalenyl- (9CI) (CA INDEX NAME)

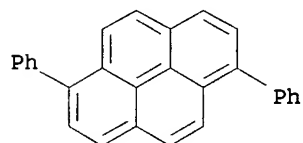


RN 43069-36-9 HCAPLUS

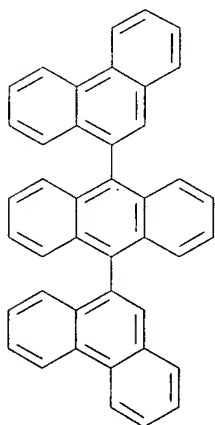
CN Anthracene, 9,10-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



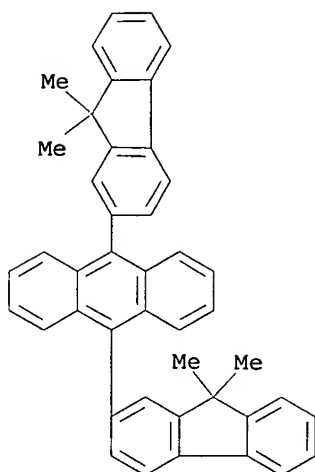
RN 55009-75-1 HCAPLUS  
CN Pyrene, 1,6-diphenyl- (9CI) (CA INDEX NAME)



RN 331749-28-1 HCAPLUS  
CN Anthracene, 9,10-di-9-phenanthrenyl- (9CI) (CA INDEX NAME)

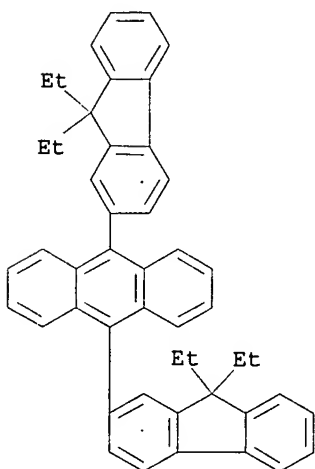


RN 400606-81-7 HCAPLUS  
CN Anthracene, 9,10-bis(9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



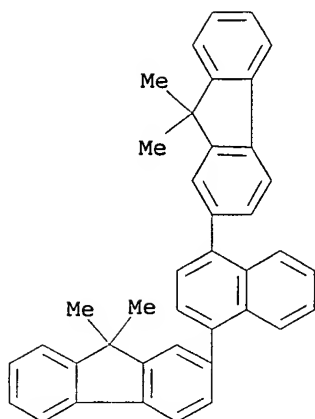
RN 626236-19-9 HCAPLUS

CN Anthracene, 9,10-bis(9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

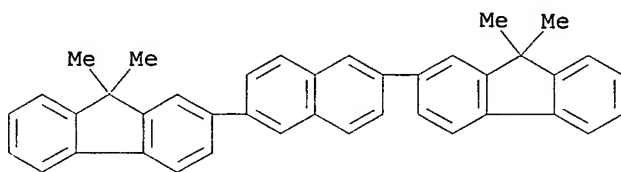


RN 653599-45-2 HCAPLUS

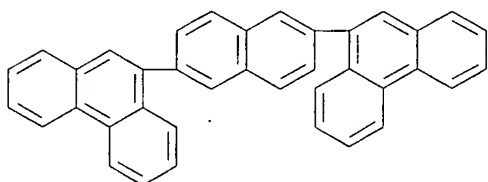
CN 9H-Fluorene, 2,2'-(1,4-naphthalenediyl)bis[9,9-diethyl- (9CI) (CA INDEX NAME)



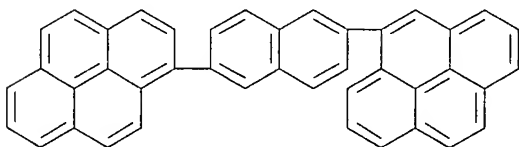
RN 653599-46-3 HCAPLUS  
 CN 9H-Fluorene, 2,2'-(2,6-naphthalenediyl)bis[9,9-dimethyl- (9CI)  
 (CA INDEX NAME)



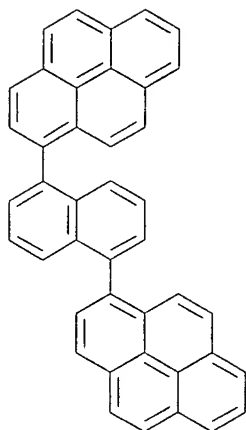
RN 722498-56-8 HCAPLUS  
 CN Phenanthrene, 9,9'-(2,6-naphthalenediyl)bis- (9CI) (CA INDEX  
 NAME)



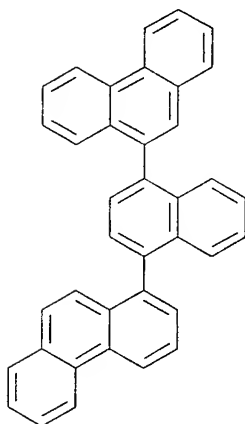
RN 722498-57-9 HCAPLUS  
 CN Pyrene, 1-[6-(4-pyrenyl)-2-naphthalenyl]- (9CI) (CA INDEX NAME)



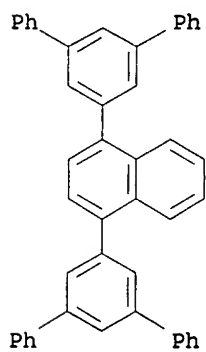
RN 722498-58-0 HCAPLUS  
 CN Pyrene, 1,1'-(1,5-naphthalenediyl)bis- (9CI) (CA INDEX NAME)



RN 722498-59-1 HCAPLUS  
 CN Phenanthrene, 1-[4-(9-phenanthrenyl)-1-naphthalenyl]- (9CI) (CA  
 INDEX NAME)

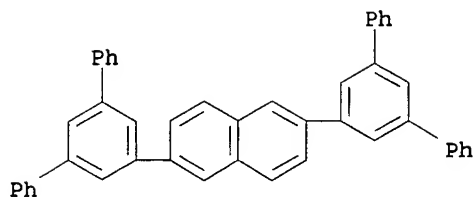


RN 722498-60-4 HCAPLUS  
 CN Naphthalene, 1,4-bis([1,1':3',1''-terphenyl]-5'-yl)- (9CI) (CA  
 INDEX NAME)

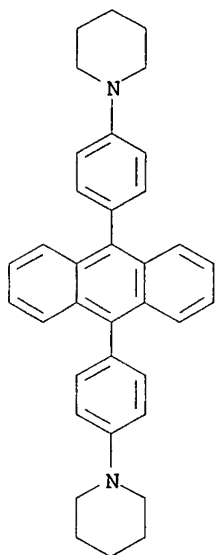


RN 722498-61-5 HCAPLUS  
 CN Naphthalene, 2,6-bis([1,1':3',1''-terphenyl]-5'-yl)- (9CI) (CA  
 INDEX NAME)

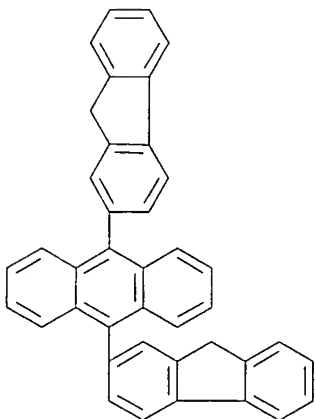
INDEX NAME)



RN 722498-62-6 HCAPLUS  
 CN Piperidine, 1,1'-(9,10-anthracenediyl)di-4,1-phenylene)bis- (9CI)  
 (CA INDEX NAME)



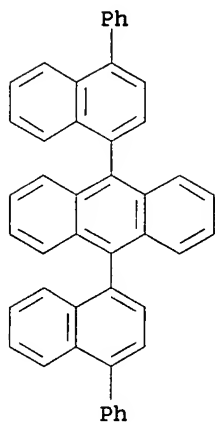
RN 722498-64-8 HCAPLUS  
 CN Anthracene, 9,10-di-9H-fluoren-2'-yl- (9CI) (CA INDEX NAME)



RN 722498-65-9 HCAPLUS  
 CN Anthracene, 9,10-bis(4-phenyl-1-naphthalenyl)- (9CI) (CA INDEX

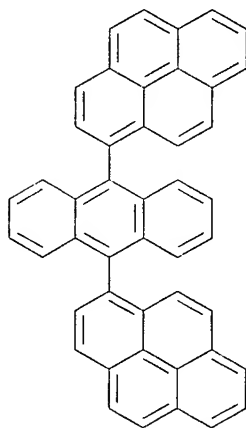


NAME)



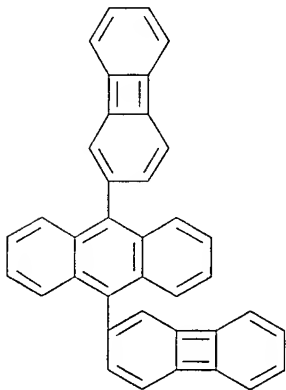
RN 722498-66-0 HCAPLUS

CN Pyrene, 1,1'-(9,10-anthracenediyl)bis- (9CI) (CA INDEX NAME)



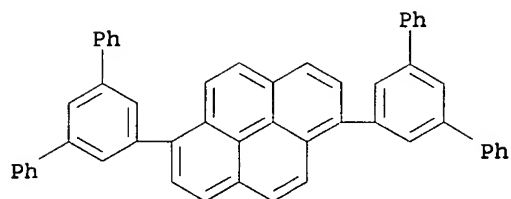
RN 722498-67-1 HCAPLUS

CN Anthracene, 9,10-bis(2-biphenylenyl)- (9CI) (CA INDEX NAME)

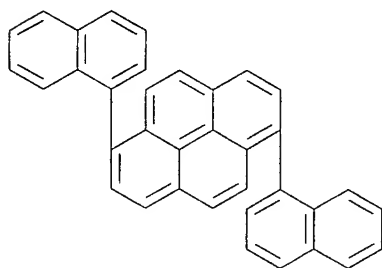


RN 722498-68-2 HCAPLUS

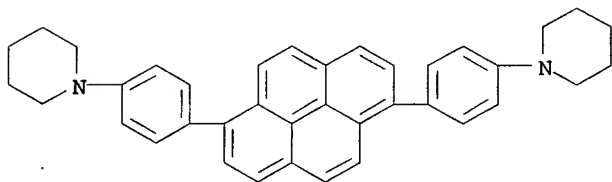
CN Pyrene, 1,6-bis([1,1':3',1''-terphenyl]-5'-yl)- (9CI) (CA INDEX NAME)



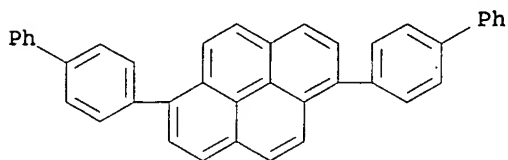
RN 722498-69-3 HCAPLUS  
CN Pyrene, 1,6-di-1-naphthalenyl- (9CI) (CA INDEX NAME)



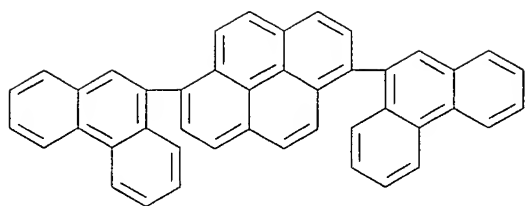
RN 722498-70-6 HCAPLUS  
CN Piperidine, 1,1'-(1,6-pyrenediyl-di-4,1-phenylene)bis- (9CI) (CA INDEX NAME)



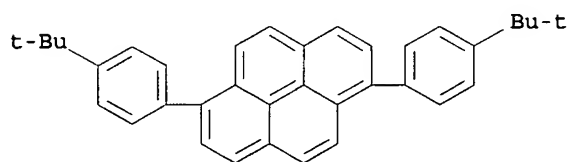
RN 722498-71-7 HCAPLUS  
CN Pyrene, 1,6-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



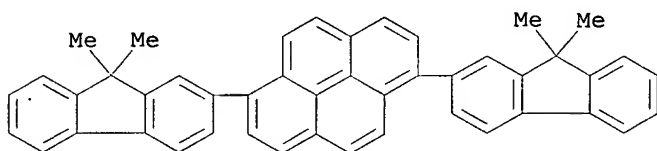
RN 722498-72-8 HCAPLUS  
CN Pyrene, 1,6-di-9-phenanthrenyl- (9CI) (CA INDEX NAME)



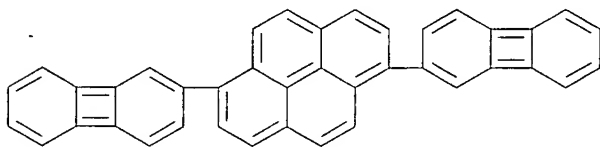
RN 722498-73-9 HCAPLUS  
 CN Pyrene, 1,6-bis[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



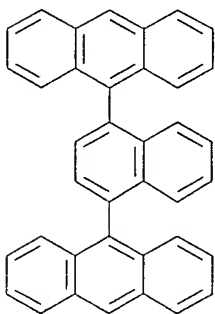
RN 722498-74-0 HCAPLUS  
 CN Pyrene, 1,6-bis(9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



RN 722498-75-1 HCAPLUS  
 CN Anthracene, 9,9'-(1,4-biphenylenyl)bis- (9CI) (CA INDEX NAME)



RN 756899-77-1 HCAPLUS  
 CN Anthracene, 9,9'-(1,4-naphthalenediyl)bis- (9CI) (CA INDEX NAME)

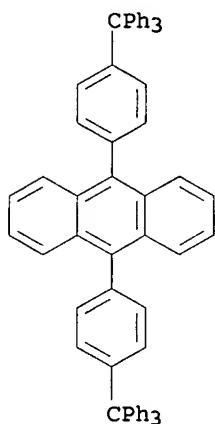


IT 722498-63-7

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (light-emitting host; organic  
 electroluminescent device employing derivative of  
 9,10-diaminoanthracene as green luminescent dopant)

RN 722498-63-7 HCAPLUS

CN Anthracene, 9,10-bis[4-(triphenylmethyl)phenyl]- (9CI) (CA INDEX  
 NAME)

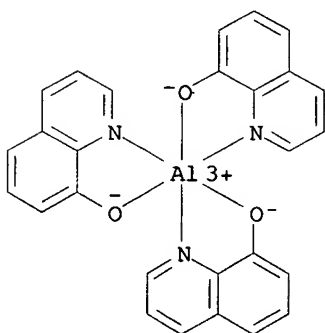


IT 2085-33-8, Alq3 123847-85-8, NPB

RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent device employing derivative of  
 9,10-diaminoanthracene as green luminescent dopant)

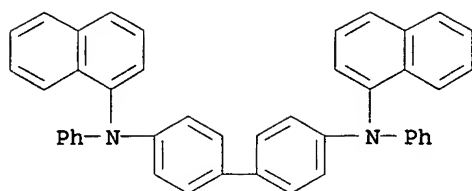
RN 2085-33-8 HCAPLUS

CN Aluminum, tris(8-quinolinolato-κN1,κO8)- (9CI) (CA  
 INDEX NAME)



RN 123847-85-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
 (9CI) (CA INDEX NAME)



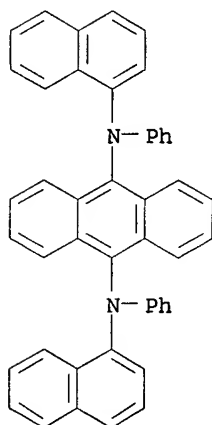
IT 177799-14-3 177799-16-5 189263-82-9  
 190974-21-1 473717-08-7 756899-41-9  
 756899-42-0 756899-43-1 756899-44-2  
 756899-45-3 756899-46-4 756899-47-5  
 756899-48-6 756899-49-7 756899-50-0  
 756899-51-1 756899-52-2 756899-53-3  
 756899-54-4 756899-55-5 756899-56-6  
 756899-57-7 756899-58-8 756899-59-9  
 756899-60-2 756899-61-3 756899-62-4  
 756899-63-5 756899-64-6 756899-66-8  
 756899-67-9 756899-68-0 756899-69-1  
 756899-70-4 756899-71-5 756899-72-6  
 756899-73-7 756899-74-8 756899-75-9  
 756899-76-0

RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)

(organic electroluminescent device employing derivative of  
 9,10-diaminoanthracene as green luminescent dopant)

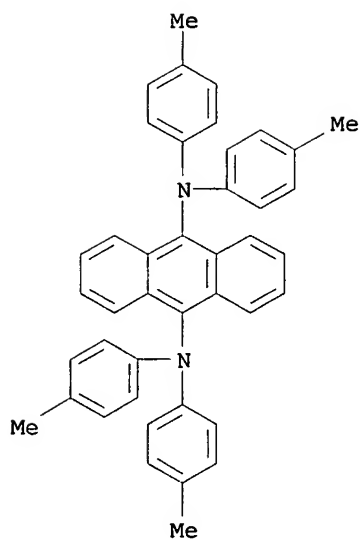
RN 177799-14-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
 (9CI) (CA INDEX NAME)

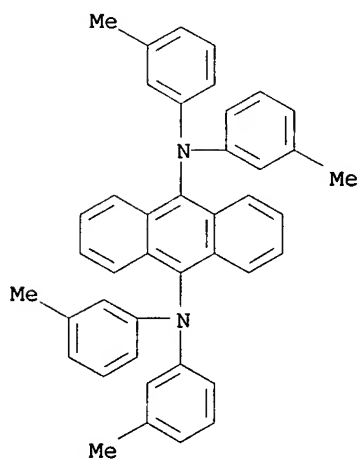


RN 177799-16-5 HCAPLUS

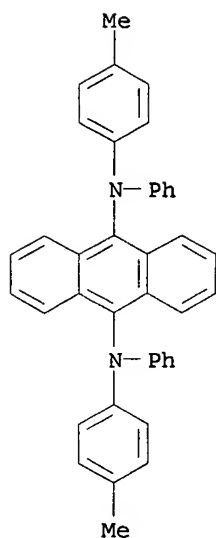
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
 (CA INDEX NAME)



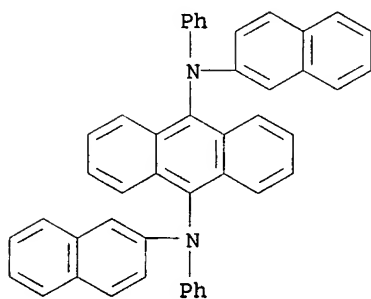
RN 189263-82-9 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(3-methylphenyl)- (9CI)  
 (CA INDEX NAME)



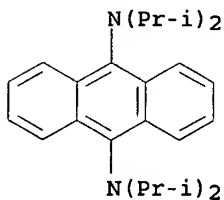
RN 190974-21-1 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(4-methylphenyl)-N,N'-diphenyl-  
 (9CI) (CA INDEX NAME)



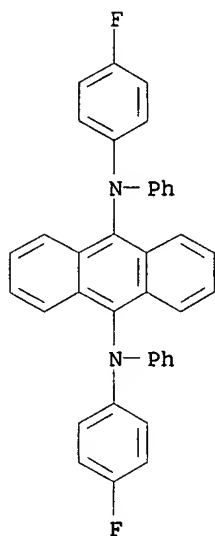
RN 473717-08-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-di-2-naphthalenyl-N,N'-diphenyl-  
 (9CI) (CA INDEX NAME)



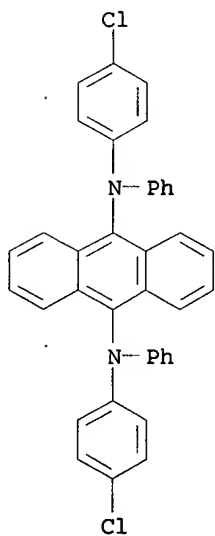
RN 756899-41-9 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(1-methylethyl)- (9CI)  
 (CA INDEX NAME)



RN 756899-42-0 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(4-fluorophenyl)-N,N'-diphenyl-  
 (9CI) (CA INDEX NAME)

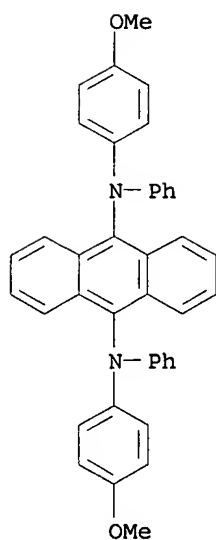


RN 756899-43-1 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(4-chlorophenyl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



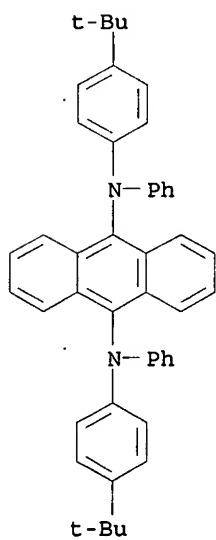
RN 756899-44-2 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(4-methoxyphenyl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)





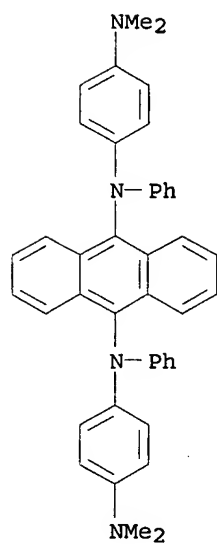
RN 756899-45-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



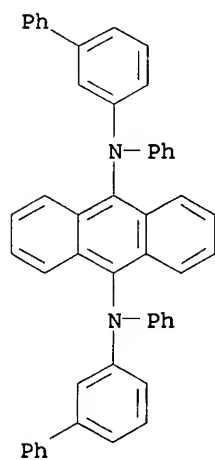
RN 756899-46-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(dimethylamino)phenyl]-N,N'-diphenyl- (9CI) (CA INDEX NAME)



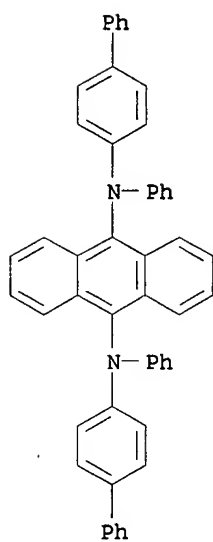
RN 756899-47-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis([1,1'-biphenyl]-3-yl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



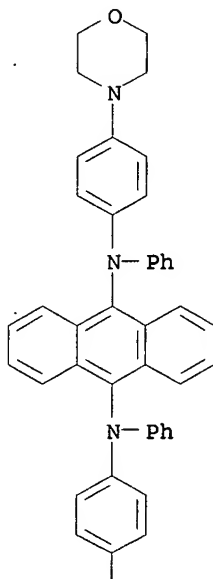
RN 756899-48-6 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis([1,1'-biphenyl]-4-yl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)

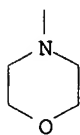


RN 756899-49-7 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[4-(4-morpholinyl)phenyl]-N,N'-  
diphenyl- (9CI) (CA INDEX NAME)

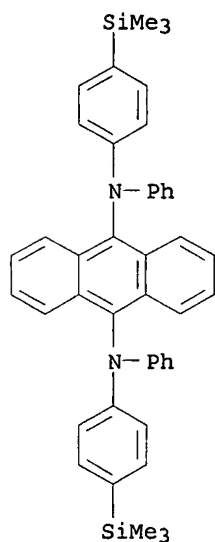
PAGE 1-A



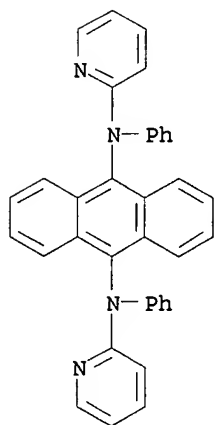
PAGE 2-A



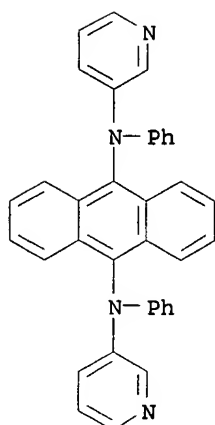
RN 756899-50-0 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-bis[4-(trimethylsilyl)phenyl]- (9CI) (CA INDEX NAME)



RN 756899-51-1 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-di-2-pyridinyl- (9CI)  
(CA INDEX NAME)

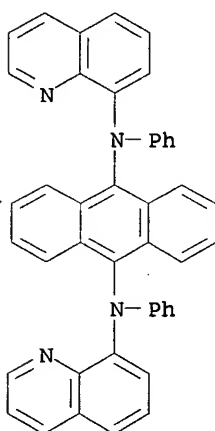


RN 756899-52-2 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-di-3-pyridinyl- (9CI)  
(CA INDEX NAME)



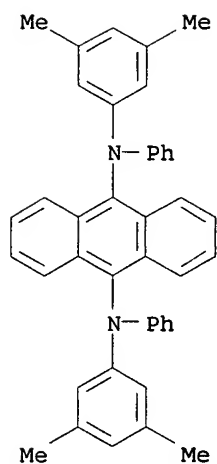
RN 756899-53-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-di-8-quinolinyl- (9CI)  
(CA INDEX NAME)



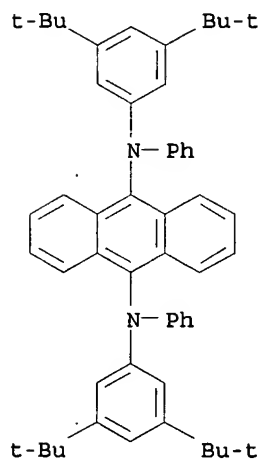
RN 756899-54-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(3,5-dimethylphenyl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



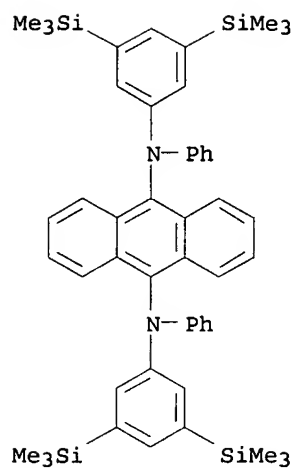
RN 756899-55-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[3,5-bis(1,1-dimethylethyl)phenyl]-  
N,N'-diphenyl- (9CI) (CA INDEX NAME)



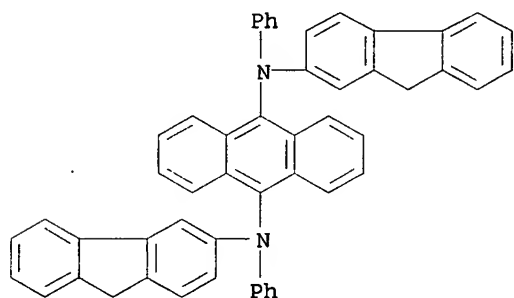
RN 756899-56-6 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[3,5-bis(trimethylsilyl)phenyl]-  
N,N'-diphenyl- (9CI) (CA INDEX NAME)



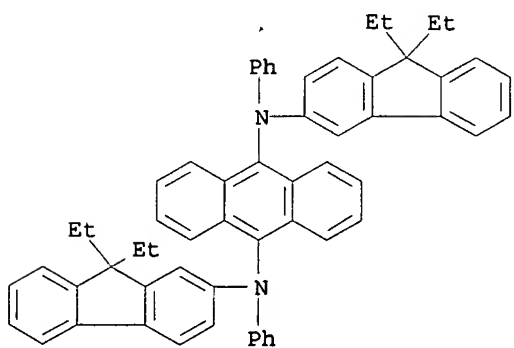
RN 756899-57-7 HCAPLUS

CN 9,10-Anthracenediamine, N-9H-fluoren-2-yl-N'-9H-fluoren-3-yl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



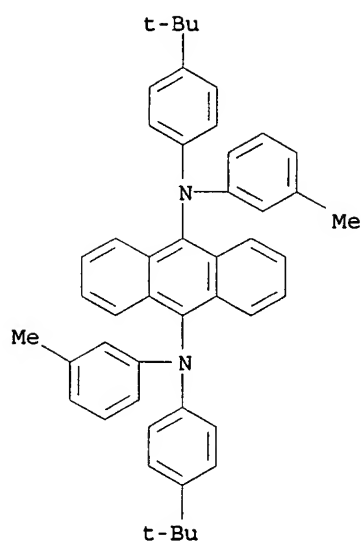
RN 756899-58-8 HCAPLUS

CN 9,10-Anthracenediamine, N-(9,9-diethyl-9H-fluoren-2-yl)-N'-(9,9-diethyl-9H-fluoren-3-yl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)

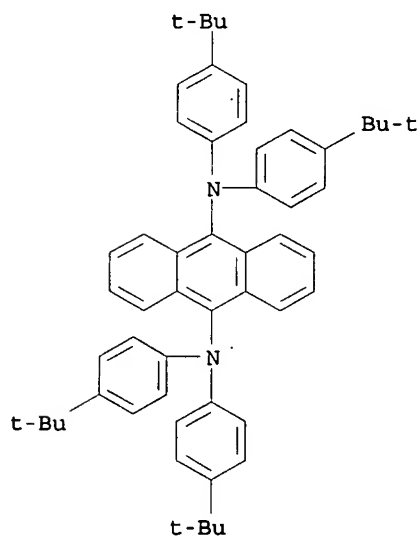


RN 756899-59-9 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)

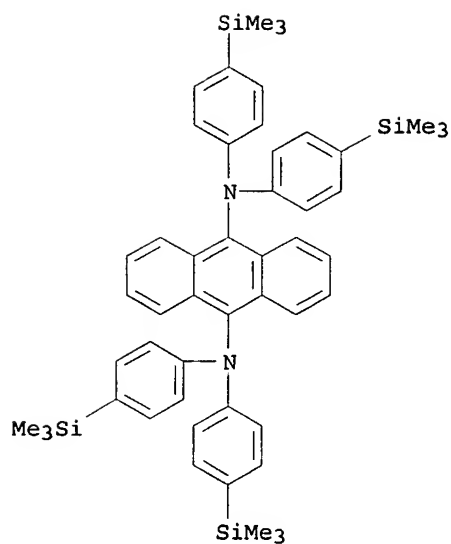


RN 756899-60-2 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



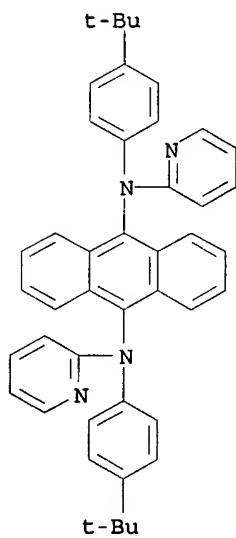
RN 756899-61-3 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(trimethylsilyl)phenyl]- (9CI) (CA INDEX NAME)





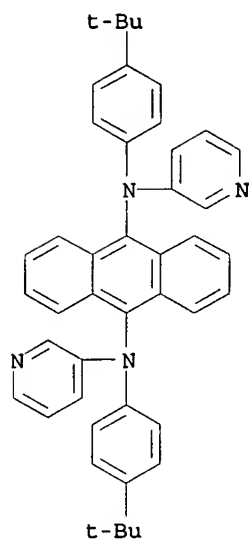
RN 756899-62-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-di-2-pyridinyl- (9CI) (CA INDEX NAME)



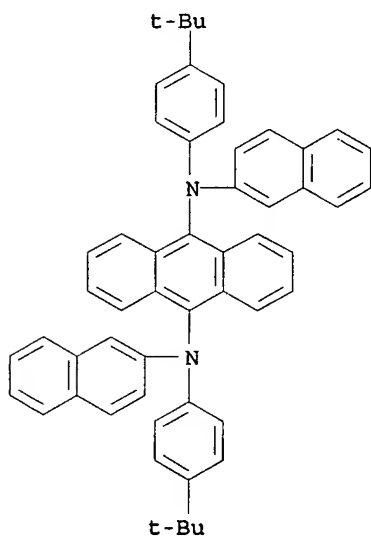
RN 756899-63-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-di-3-pyridinyl- (9CI) (CA INDEX NAME)



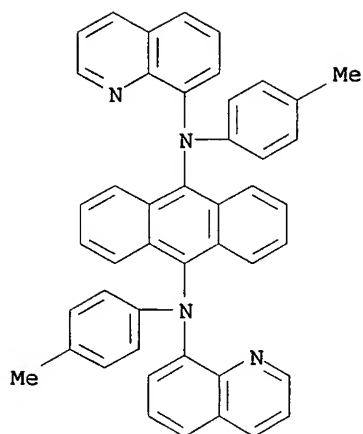
RN 756899-64-6 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-di-2-naphthalenyl- (9CI) (CA INDEX NAME)



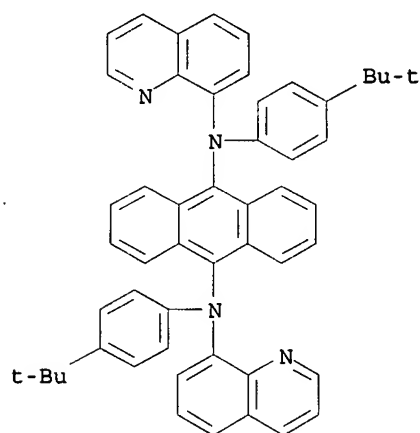
RN 756899-66-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-methylphenyl)-N,N'-di-8-quinolinyl- (9CI) (CA INDEX NAME)



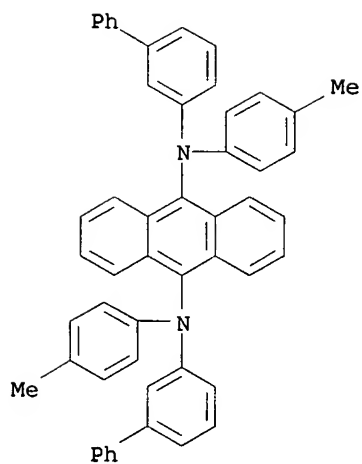
RN 756899-67-9 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-di-8-quinolinyl- (9CI) (CA INDEX NAME)



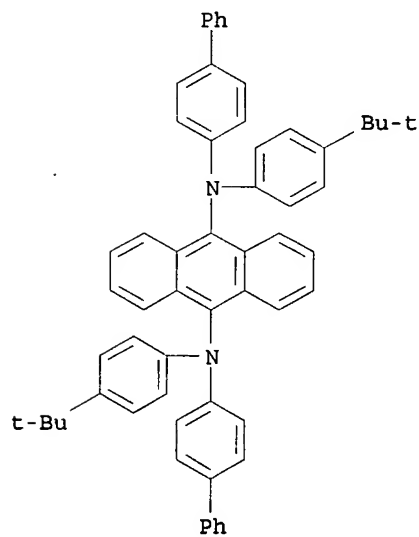
RN 756899-68-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis([1,1'-biphenyl]-3-yl)-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



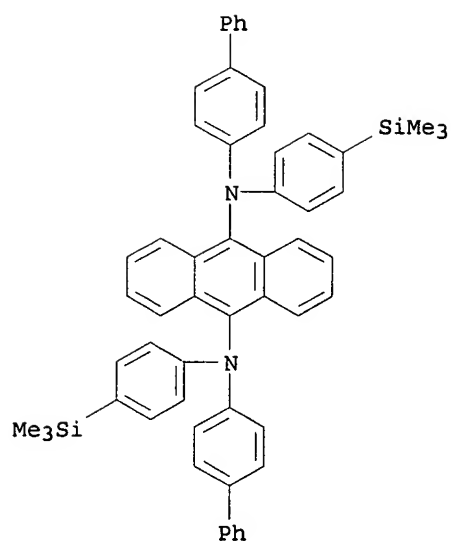
RN 756899-69-1 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis([1,1'-biphenyl])-4-yl-N,N'-bis[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)

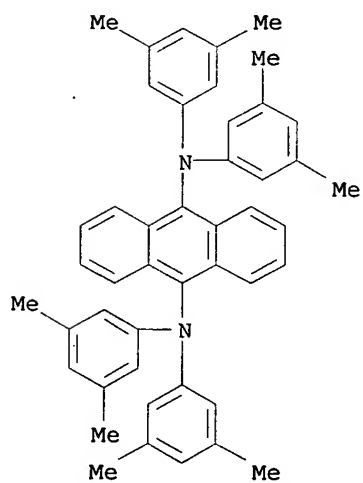


RN 756899-70-4 HCAPLUS

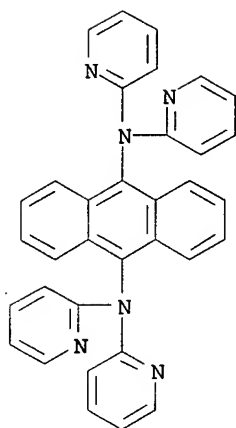
CN 9,10-Anthracenediamine, N,N'-bis([1,1'-biphenyl])-4-yl-N,N'-bis[4-(trimethylsilyl)phenyl]- (9CI) (CA INDEX NAME)



RN 756899-71-5 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(3,5-dimethylphenyl)-  
 (9CI) (CA INDEX NAME)

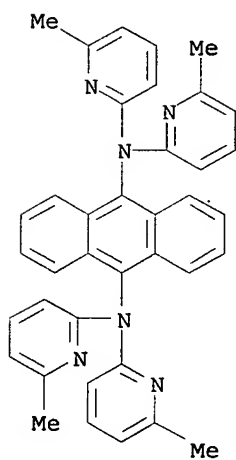


RN 756899-72-6 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetra-2-pyridinyl- (9CI) (CA  
 INDEX NAME)



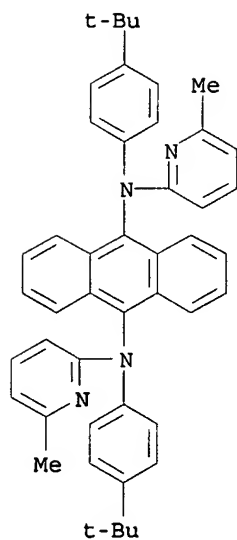
RN 756899-73-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(6-methyl-2-pyridinyl)-  
(9CI) (CA INDEX NAME)



RN 756899-74-8 HCAPLUS

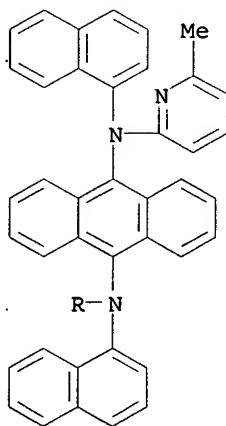
CN 9,10-Anthracenediamine, N,N'-bis[4-(1,1-dimethylethyl)phenyl]-N,N'-  
bis(6-methyl-2-pyridinyl)- (9CI) (CA INDEX NAME)



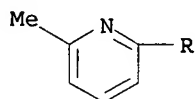
RN 756899-75-9 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(6-methyl-2-pyridinyl)-N,N'-di-1-naphthalenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

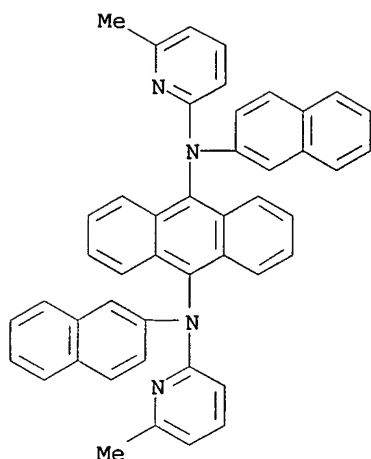


PAGE 2-A



RN 756899-76-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(6-methyl-2-pyridinyl)-N,N'-di-2-naphthalenyl- (9CI) (CA INDEX NAME)



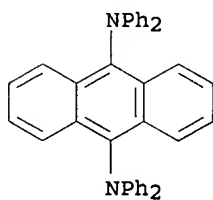
IT 177799-11-0P 189263-81-8P 756899-65-7P

RL: DEV (Device component use); MOA (Modifier or additive use);  
PRP (Properties); SPN (Synthetic preparation); PREP (Preparation);  
USES (Uses)

(organic electroluminescent device employing derivative of  
9,10-diaminoanthracene as green luminescent dopant)

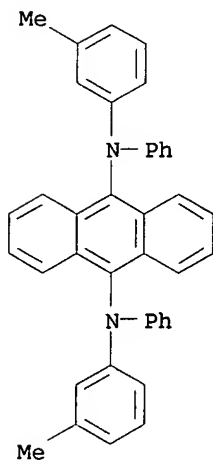
RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX  
NAME)



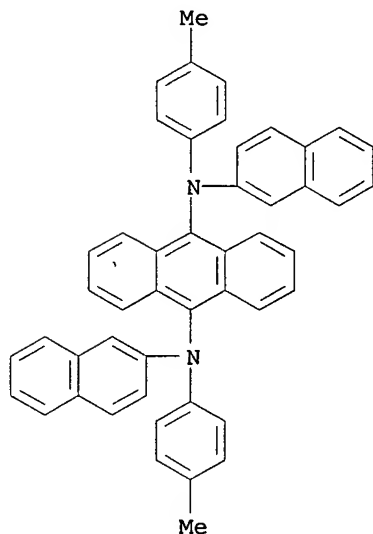
RN 189263-81-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(3-methylphenyl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)





RN 756899-65-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(4-methylphenyl)-N,N'-di-2-naphthalenyl- (9CI) (CA INDEX NAME)



IC ICM C09K  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 76  
 ST org **electroluminescent** device diaminoanthracene deriv  
 green **luminescent** dopant OLED  
 IT **Luminescent substances**  
 (green dopant; organic **electroluminescent** device  
 employing derivative of 9,10-diaminoanthracene as green  
**luminescent** dopant)  
 IT **Electroluminescent devices**  
 (organic **electroluminescent** device employing derivative of  
 9,10-diaminoanthracene as green **luminescent** dopant)  
 IT 26979-27-1 43069-36-9 55009-75-1  
 331749-28-1 400606-81-7 626236-19-9  
 653599-45-2 653599-46-3 722498-56-8  
 722498-57-9 722498-58-0 722498-59-1  
 722498-60-4 722498-61-5 722498-62-6  
 722498-64-8 722498-65-9 722498-66-0  
 722498-67-1 722498-68-2 722498-69-3  
 722498-70-6 722498-71-7 722498-72-8  
 722498-73-9 722498-74-0 722498-75-1  
 756899-77-1  
 RL: DEV (Device component use); USES (Uses)  
 (light-emitting host; organic  
**electroluminescent** device employing derivative of  
 9,10-diaminoanthracene as green **luminescent** dopant)  
 IT 722498-63-7  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (light-emitting host; organic  
**electroluminescent** device employing derivative of  
 9,10-diaminoanthracene as green **luminescent** dopant)  
 IT 2085-33-8, Alq3 123847-85-8, NPB  
 RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent** device employing derivative of  
 9,10-diaminoanthracene as green **luminescent** dopant)  
 IT 177799-14-3 177799-16-5 189263-82-9

190974-21-1 473717-08-7 756899-41-9  
756899-42-0 756899-43-1 756899-44-2  
756899-45-3 756899-46-4 756899-47-5  
756899-48-6 756899-49-7 756899-50-0  
756899-51-1 756899-52-2 756899-53-3  
756899-54-4 756899-55-5 756899-56-6  
756899-57-7 756899-58-8 756899-59-9  
756899-60-2 756899-61-3 756899-62-4  
756899-63-5 756899-64-6 756899-66-8  
756899-67-9 756899-68-0 756899-69-1  
756899-70-4 756899-71-5 756899-72-6  
756899-73-7 756899-74-8 756899-75-9  
756899-76-0

RL: DEV (Device component use); MOA (Modifier or additive use);  
USES (Uses)

(organic electroluminescent device employing derivative of  
9,10-diaminoanthracene as green luminescent dopant)

IT 177799-11-0P 189263-81-8P 756899-65-7P

RL: DEV (Device component use); MOA (Modifier or additive use);  
PRP (Properties); SPN (Synthetic preparation); PREP (Preparation);  
USES (Uses)

(organic electroluminescent device employing derivative of  
9,10-diaminoanthracene as green luminescent dopant)

L94 ANSWER 4 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:587037 HCAPLUS

DOCUMENT NUMBER: 141:131068

TITLE: Electroluminescent compositions, and  
their organic electroluminescent  
devices emitting light  
from green to yellow

INVENTOR(S): Onikubo, Shunichi; Yauchi, Hiroyuki; Yagi,  
Tamao; Kaneko, Tetsuya; Tanaka, Hiroaki;  
Takada, Yasuyuki

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 67 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004206893	A2	20040722	JP 2002-371262	2002 1224

<--

PRIORITY APPLN. INFO.: JP 2002-371262

2002  
1224

AB The compns. contain (A) compds. having peaks at 475-600 nm in  
fluorescent spectra of their solid films and (B) compds.  
showing the sum of areas (intensities)  $\leq 20\%$  at  $\leq 500$   
nm and  $\geq 600$  nm, or at  $\geq 500$  nm based on total areas  
(intensities) at 400-800 nm in fluorescent spectrum of  
solid films comprising A and 5% B. Organic  
electroluminescent devices having emitter layers containing  
the compns. containing 1:0.1 perylene derivative and  
diketopyrrolopyrrole derivative showed high luminescence  
intensity and good durability in repeated use.

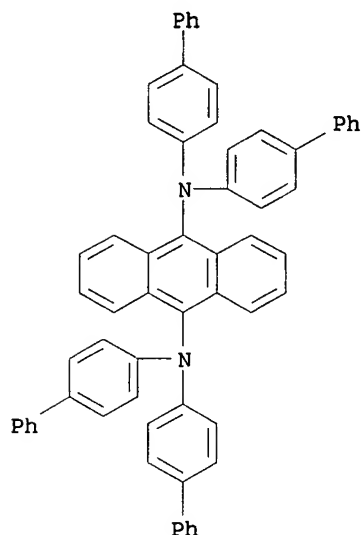
IT 189263-85-2

RL: DEV (Device component use); MOA (Modifier or additive use);  
TEM (Technical or engineered material use); USES (Uses)

(dopant; electroluminescent compns. for organic  
electroluminescent devices showing high  
luminescence intensity and durability in repeated use)

RN 189263-85-2 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)-  
(9CI) (CA INDEX NAME)



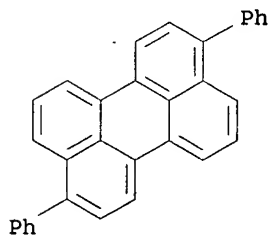
IT 724788-97-0

RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)

(host; electroluminescent compns. for organic  
electroluminescent devices showing high  
luminescence intensity and durability in repeated use)

RN 724788-97-0 HCAPLUS

CN Perylene, 3,9-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

ST perylene diketopyrrolopyrrole org  
electroluminescent device; green yellow emitting org  
electroluminescent device

IT Luminescent substances

(electroluminescent; electroluminescent  
compns. for organic electroluminescent devices showing  
high luminescence intensity and durability in  
repeated use)

IT Electroluminescent devices

(from green to yellow; electroluminescent compns. for

organic electroluminescent devices showing high  
luminescence intensity and durability in repeated use)

IT 19205-19-7 41175-45-5 149247-31-4 155306-71-1 158782-55-9,  
Tetrabenzo[fg,ij,pq,uv]pentaphene 184101-39-1  
189263-85-2 194296-06-5 227009-37-2 252756-13-1  
307303-24-8 519180-18-8 519180-37-1 536761-34-9  
536761-41-8 536761-56-5 724789-12-2, 2,2'-Biperylene  
724789-15-5, Perylo[1,12-bcd:6,7-b'c'd']difuran 724789-18-8  
724789-20-2 724789-23-5 724789-25-7 724789-28-0  
724789-30-4 724789-31-5 724789-33-7 724789-36-0  
724789-45-1

RL: DEV (Device component use); MOA (Modifier or additive use);  
TEM (Technical or engineered material use); USES (Uses)

(dopant; electroluminescent compns. for organic  
electroluminescent devices showing high  
luminescence intensity and durability in repeated use)

IT 2085-33-8 23467-27-8 96158-94-0 96159-17-0 107680-84-2  
107680-85-3 123847-85-8 175395-59-2 188049-37-8  
194214-31-8 205104-13-8 227009-35-0 227009-36-1  
384343-78-6 384343-80-0 474067-56-6 477719-72-5  
536761-33-8 536761-36-1 536761-38-3 536761-39-4  
536761-55-4 724788-95-8 724788-97-0 724788-98-1  
724789-00-8 724789-02-0 724789-03-1 724789-05-3  
724789-60-0 724789-62-2 724789-65-5

RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)

(host; electroluminescent compns. for organic  
electroluminescent devices showing high  
luminescence intensity and durability in repeated use)

L94 ANSWER 5 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:495621 HCAPLUS

DOCUMENT NUMBER: 141:61845

TITLE: Organic electroluminescence device

INVENTOR(S): Seki, Mieko; Yoneyama, Hiroto; Okuda, Daisuke;  
Hirose, Eiichi; Ozaki, Tadayoshi; Agata,  
Takeshi; Ishii, Toru; Mashimo, Kiyokazu; Sato,  
Katsuhiro

PATENT ASSIGNEE(S): Fuji Xerox Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 116 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004171858	A2	20040617	JP 2002-334871	2002 1119

<--

PRIORITY APPLN. INFO.: JP 2002-334871

2002  
1119

AB The invention relates to an organic electroluminescent  
device comprising the charge transporting polyester having the  
partial structure represented by -(T)l(O)n-  
C6H4N(Ar)X[N(Ar)C6H4]k(O)n(T)l- and -(T)l(O)n-  
C6H4C6H4N(Ar)X[N(Ar)C6H4C6H4]k(O)n(T)l- [Ar = Ph, 2-10 ring  
polynuclear aromatic, 2-10 ring condensed aromatic, etc.; X = divalent  
aromatic group derived from anthracene, tetracene,  
pyrene, etc.; k n l = 0 and 1; T = C1-6 normal chain  
hydrocarbons and C2-10 branched hydrocarbons].

IT 705274-71-1P 705274-74-4P 705274-82-4P  
705275-35-0P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)  
(charge transporting polyester for organic  
electroluminescence device)

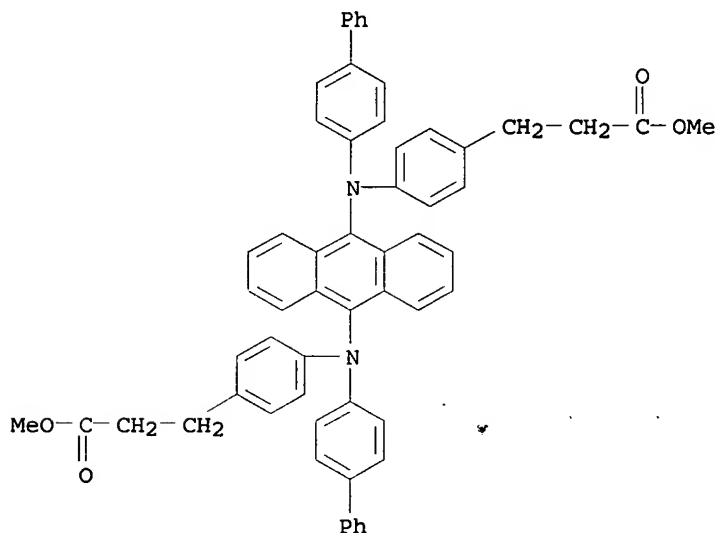
RN 705274-71-1 HCAPLUS

CN Benzenepropanoic acid, 4,4'-[9,10-anthracenediylbis([1,1'-  
biphenyl]-4-ylimino)]bis-, dimethyl ester, polymer with  
1,2-ethanediol (9CI) (CA INDEX NAME)

CM 1

CRN 705274-70-0

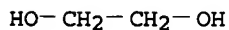
CMF C58 H48 N2 O4



CM 2

CRN 107-21-1

CMF C2 H6 O2



RN 705274-74-4 HCAPLUS

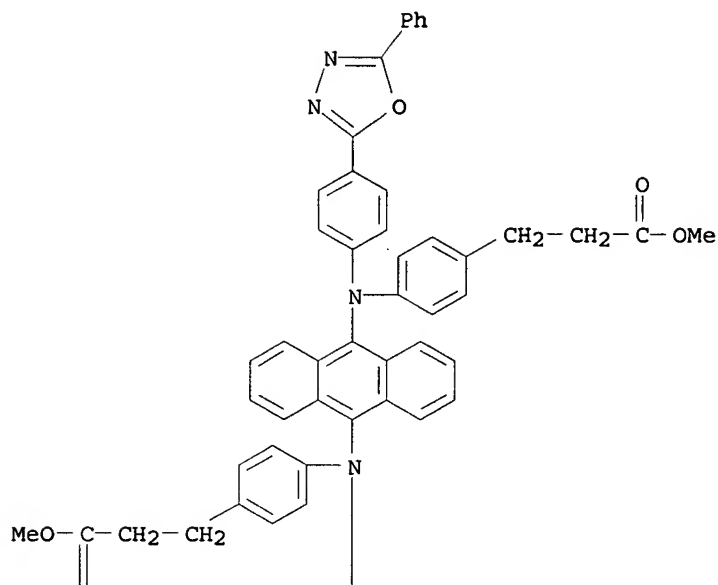
CN Benzenepropanoic acid, 4,4'-[9,10-anthracenediylbis[[4-(5-phenyl-  
1,3,4-oxadiazol-2-yl)phenyl]imino]]bis-, dimethyl ester, polymer  
with 1,2-ethanediol (9CI) (CA INDEX NAME)

CM 1

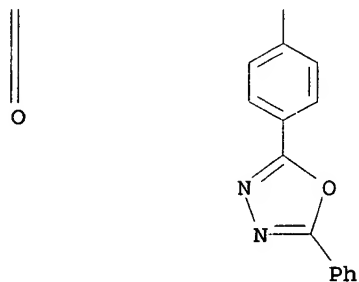
CRN 705274-73-3

CMF C62 H48 N6 O6

PAGE 1-A



PAGE 2-A



CM 2

CRN 107-21-1  
CMF C2 H6 O2

HO-CH<sub>2</sub>-CH<sub>2</sub>-OH

RN 705274-82-4 HCAPLUS

CN Poly[oxy-1,2-ethanediyl]oxy(1-oxo-1,3-propanediyl)-1,4-phenylene[[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenyl]imino]-9,10-anthracenediyl[[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenyl]imino]-1,4-phenylene(3-oxo-1,3-propanediyl)] (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

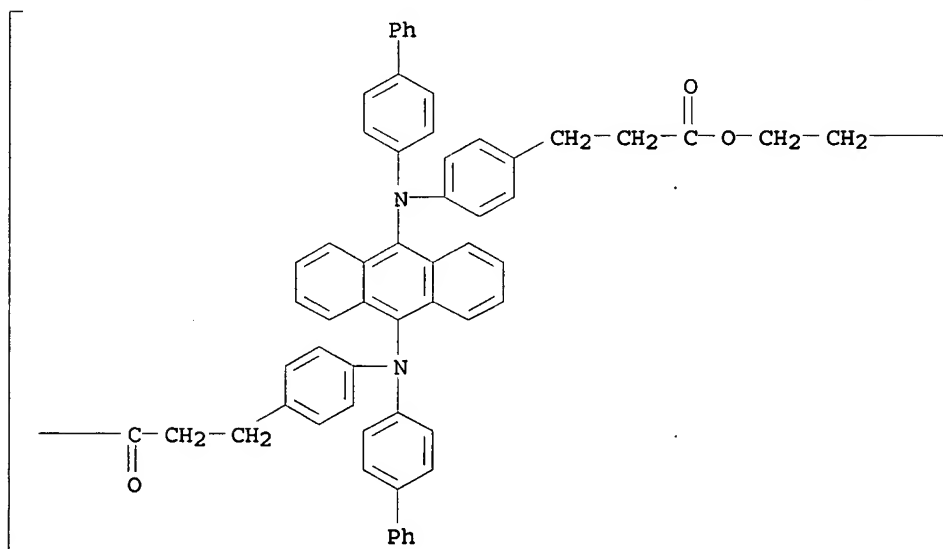
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

RN 705275-35-0 HCAPLUS

CN Poly[oxy-1,2-ethanediyl-oxy(1-oxo-1,3-propanediyl)-1,4-phenylene([1,1'-biphenyl]-4-ylimino)-9,10-anthracenediyl([1,1'-biphenyl]-4-ylimino)-1,4-phenylene(3-oxo-1,3-propanediyl)] (9CI)  
(CA INDEX NAME)

PAGE 1-A



—○—

L94 ANSWER 6 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2004:367239 HCAPLUS  
DOCUMENT NUMBER: 140:375687  
TITLE: Arylamine-containing conjugated polymers,  
their preparation and use.  
INVENTOR(S): Buesing, Arne; Breuning, Ester; Spreitzer,  
Hubert; Becker, Heinrich; Haase, Corinna  
PATENT ASSIGNEE(S): Covion Organic Semiconductors GmbH, Germany  
SOURCE: Ger. Offen., 25 pp.  
CODEN: GWXXBX  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

571-272-2538



```

-----
DE 10249723      A1      20040506      DE 2002-10249723      2002
                                                    1025

WO 2004037887    A2      20040506      WO 2003-EP11510      2003
                                                    1017

WO 2004037887    A3      20040527
W: CN, JP, KR, US
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,
    HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR
EP 1558662        A2      20050803      EP 2003-776866      2003
                                                    1017

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,
    MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK
CN 1708528        A      20051214      CN 2003-80102026      2003
                                                    1017

JP 2006504814    T2      20060209      JP 2004-545870      2003
                                                    1017

US 2006058494    A1      20060316      US 2005-532465      2005
                                                    0607

PRIORITY APPLN. INFO.:      DE 2002-10249723      A      2002
                                                    1025

WO 2003-EP11510      W      2003
                                                    1017

```

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT

\*

AB The title polymers, useful as **electroluminescent** materials in passive matrix display (OLEDs, OFETs, OTFTs, solar cells and organic integrated circuits) contain  $\geq 1$  mol.% of the units I (Ar1, Ar3 = optionally substituted C2-40 aromatic and heteroarom. rings, Ar2, Ar4 = Ar1, Ar3 or optionally substituted stilbenylene- or tolylene-fragments, Ar-kond = conjugated aromatic system, consisting of  $\geq 2$  rings and containing 9-40 C- or hetero-atoms) among other structure units including aromatic and heteroarom. fragments, metallo-complexes and complexes of transition metals and metals of VIII-X group exhibit improved operation life span and high **luminescence** efficiency especially at high radiation d. Thus, heating 1.6103 g of II, 1.0825 g of III, 0.3098 g of N,N'-Bis-(4-bromophenyl)-N,N'-bis-(4-methylnaphthyl)biphenyl-4,4'-diamine and 1.96 g of K2HPO4 in a mixture dioxane/toluene/H2O in the presence of Pd(OAc)2 and P(o-tolyl)3 for 2.5 h gives (after purification and distillation) polymer with mol. weight 1,300,000 having life time 2500 h at radiation d. 100 Cd/m2.

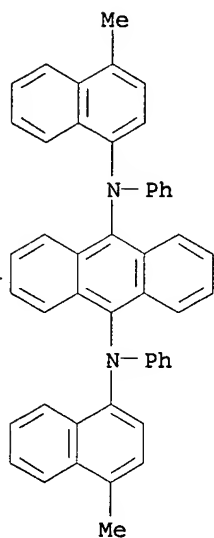
IT 681829-70-9P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(monomer precursor; arylamine-containing conjugated polymers with improved operation life span and high **luminescence**)

efficiency useful in passive matrix display)

RN 681829-70-9 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-methyl-1-naphthalenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



IT 681829-71-0P

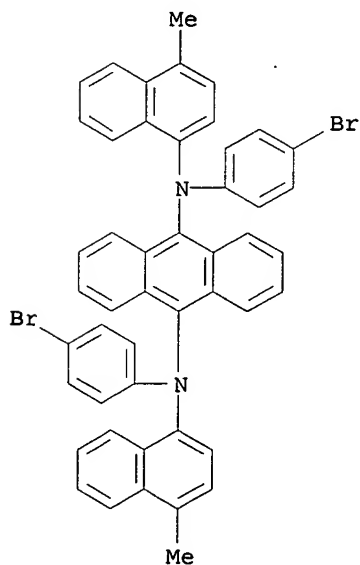
RL: IMF (Industrial manufacture); RCT (Reactant); PREP

(Preparation); RACT (Reactant or reagent)

(monomer; arylamine-containing conjugated polymers with improved operation life span and high luminescence efficiency useful in passive matrix display)

RN 681829-71-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-bromophenyl)-N,N'-bis(4-methyl-1-naphthalenyl)- (9CI) (CA INDEX NAME)



IC ICM C08G073-02

ICS C09K011-06; H01L033-00; H05B033-14

- CC 35-5 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 76
- ST arylamine conjugated polymer improved **electroluminescent** material life; enhanced **luminescence** efficiency passive matrix display; **fluorene** arylamine conjugated polymer spirobisfluorene arylamine conjugated polymer manuf
- IT Field effect transistors  
Integrated circuits  
Semiconductor lasers  
Solar cells  
Thin film transistors  
(arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT Polyamines  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT **Electroluminescent** devices  
(displays; arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT **Luminescent** screens  
(**electroluminescent**; arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT Transition metal complexes  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polymer derivs; arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT 681829-72-1P 681829-73-2P 681829-74-3P  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT 227187-55-5P 681829-66-3P 681829-67-4P **681829-70-9P**  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(monomer precursor; arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT 523-27-3, 9,10-Dibromoanthracene 531-91-9, N,N'-Diphenylbenzidine 939-26-4, 2-Bromomethylnaphthalene 41499-91-6, 1-(Pentamethylphenyl)naphthalene 51793-09-0  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(monomer precursor; arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)
- IT 681829-68-5P 681829-69-6P **681829-71-0P**  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; arylamine-containing conjugated polymers with improved operation life span and high **luminescence** efficiency useful in passive matrix display)

L94 ANSWER 7 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:182957 HCAPLUS

DOCUMENT NUMBER: 140:243296

TITLE: Organic **electroluminescent** devices  
and organic **luminescent** medium

INVENTOR(S): Matsuura, Masahide; Funahashi, Masakazu;

PATENT ASSIGNEE(S): Fukuoka, Kenichi; Hosokawa, Chishio  
 SOURCE: Idemitsu Kosan Co., Ltd., Japan  
 PCT Int. Appl., 77 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004018588	A1	20040304	WO 2003-JP8463	2003 0703

&lt;--

W: CN, JP, KR  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,  
 HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR  
 EP 1541657 A1 20050615 EP 2003-738656  
 2003  
0703

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
 MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK  
 CN 1668719 A 20050914 CN 2003-817301  
 2003  
0703

US 2005064233 A1 20050324 US 2003-617397  
 2003  
0711

US 2006033421 A1 20060216 US 2005-207933  
 2005  
0822

PRIORITY APPLN. INFO.: JP 2002-211308 A  
 2002  
0719

WO 2003-JP8463 W  
 2003  
0703

US 2003-617397 A3  
 2003  
0711

OTHER SOURCE(S): MARPAT 140:243296

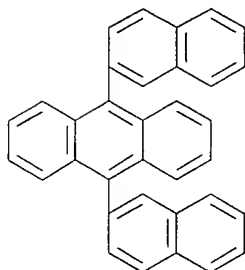
AB An organic electroluminescent device comprises a pair of electrodes and an organic luminescent medium layer which is placed between the electrodes and contains (A) a specific arylamine and (B) at least one compound selected from among specific anthracene derivs., spiro fluorene derivs., fused-ring compds., and metal complexes; and an organic luminescent medium containing the components (A) and (B). The organic electroluminescent device exhibits high color purity, excellent heat resistance and a long lifetime and emits blue to yellow light at high efficiency, and the organic luminescent medium is suitable for use in such devices.

IT 122648-99-1 172285-79-9 172285-83-5  
 349666-25-7 400606-81-7 668019-24-7  
 668019-76-9 668020-28-8 668020-34-6  
 668020-67-5 668020-74-4

RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent devices and organic luminescent medium)

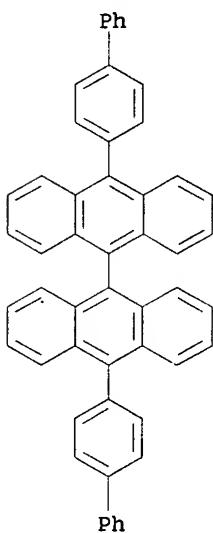
RN 122648-99-1 HCAPLUS

CN Anthracene, 9,10-di-2-naphthalenyl- (9CI) (CA INDEX NAME)



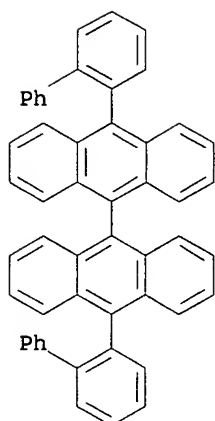
RN 172285-79-9 HCAPLUS

CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)

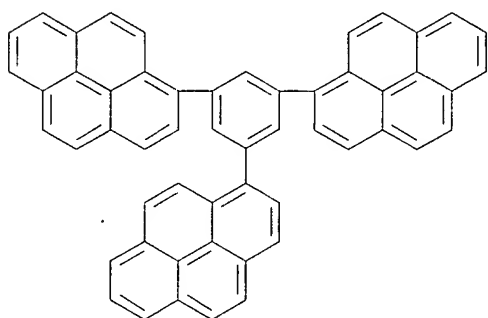


RN 172285-83-5 HCAPLUS

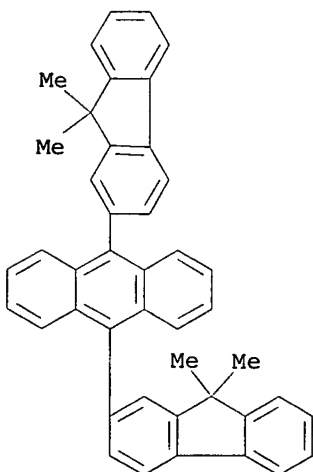
CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-2-yl)- (9CI) (CA INDEX NAME)



RN 349666-25-7 HCAPLUS  
 CN Pyrene, 1,1',1''-(1,3,5-benzenetriyl)tris- (9CI) (CA INDEX NAME)

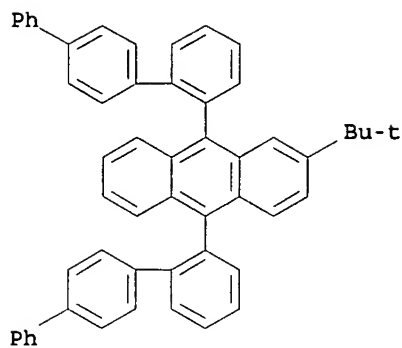


RN 400606-81-7 HCAPLUS  
 CN Anthracene, 9,10-bis(9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

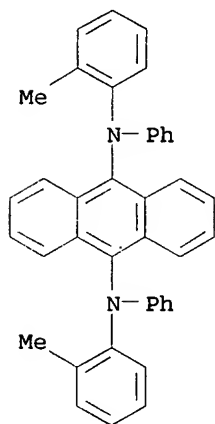


RN 668019-24-7 HCAPLUS  
 CN Anthracene, 2-(1,1-dimethylethyl)-9,10-bis([1,1':4',1''-terphenyl]-

2-yl)- (9CI) (CA INDEX NAME)

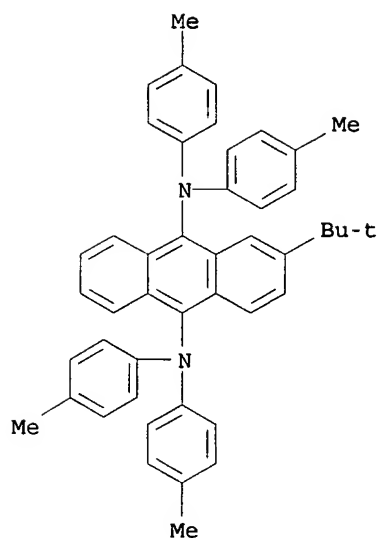


RN 668019-76-9 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(2-methylphenyl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)

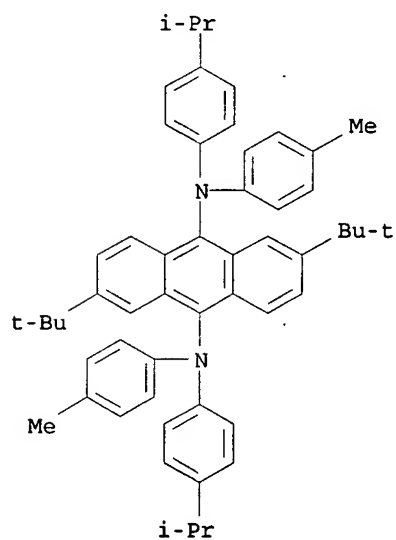
RN 668020-28-8 HCAPLUS

CN 9,10-Anthracenediamine, 2-(1,1-dimethylethyl)-N,N,N',N'-tetrakis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 668020-34-6 HCAPLUS

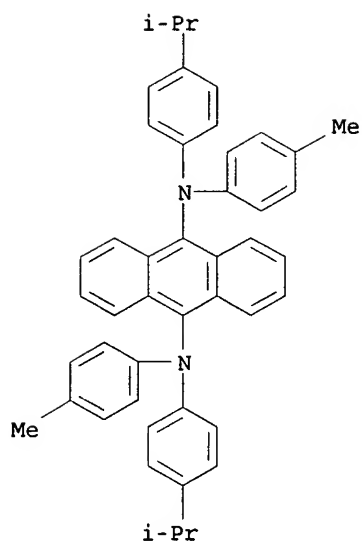
CN 9,10-Anthracenediamine, 2,6-bis(1,1-dimethylethyl)-N,N'-bis[4-(1-methylethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



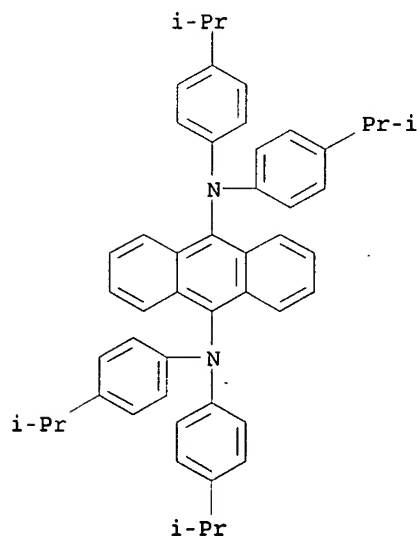
RN 668020-67-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(1-methylethyl)phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)





RN 668020-74-4 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methylethyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
 ICS H05B033-14; H05B033-22  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 74  
 ST **org electroluminescent luminescent**  
 medium; **anthracene spiro fluorene** fused ring  
 compd metal complex  
 IT **Electroluminescent devices**  
 (organic **electroluminescent** devices and **organic**  
**luminescent** medium)  
 IT 76656-53-6 122648-99-1 131625-67-7 171408-93-8  
 172285-79-9 172285-83-5 220721-68-6  
 244281-01-4 279672-22-9 349666-25-7

400606-81-7 475461-15-5 668019-24-7  
 668019-64-5 668019-76-9 668019-96-3 668020-07-3  
 668020-14-2 668020-20-0 668020-26-6 668020-28-8  
 668020-34-6 668020-39-1 668020-46-0 668020-53-9  
 668020-61-9 668020-67-5 668020-74-4  
 668020-81-3 668020-88-0

RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent devices and organic  
 luminescent medium)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L94 ANSWER 8 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:913158 HCAPLUS

DOCUMENT NUMBER: 139:388293

TITLE: New organic compounds for  
 electroluminescence and organic  
 electroluminescent devices using the  
 same

INVENTOR(S): Kim, Ji-Eun; Son, Se-Hwan; Bae, Jae-Soon; Lee,  
 Youn-Gu; Kim, Kong-Kyeum; Lee, Jae-Chol; Jang,  
 Jun-Gi; Im, Sung-Gap

PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea

SOURCE: PCT Int. Appl., 145 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003095445	A1	20031120	WO 2003-KR899	2003 0506

<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,  
 KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
 MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC,  
 SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ,  
 VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL,  
 PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN,  
 GQ, GW, ML, MR, NE, SN, TD, TG

KR 2003087522	A	20031114	KR 2003-10439	2003 0219
---------------	---	----------	---------------	--------------

<--

AU 2003230308	A1	20031111	AU 2003-230308	2003 0506
---------------	----	----------	----------------	--------------

<--

US 2004067387	A1	20040408	US 2003-431349	2003 0506
---------------	----	----------	----------------	--------------

<--

CN 1556803	A	20041222	CN 2003-801106	2003 0506
------------	---	----------	----------------	--------------

<--

EP 1501821 A1 20050202 EP 2003-723417 2003  
0506

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,  
EE, HU, SK

JP 2005531552 T2 20051020 JP 2004-503461 2003  
0506

KR 2004028954 A 20040403 KR 2004-701285 2004  
0129

PRIORITY APPLN. INFO.: <--  
KR 2002-25084 A 2002  
0507

KR 2003-10439 A 2003  
0219

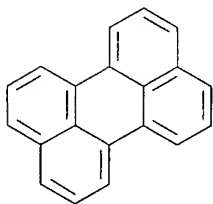
WO 2003-KR899 W 2003  
0506

OTHER SOURCE(S): MARPAT 139:388293

AB Disclosed is a novel group of compds. having a general structure of anthracene body substituted with at least one thiophenyl group, which can be further substituted with various substituent groups. These new compds. are generally compatible with organic electroluminescence. Also disclosed are organic electroluminescent devices and method of making the same. The organic electroluminescent devices include at least one of the compds. in various layers thereof. Organic electroluminescent devices employing the new compds. in their light-emitting layers show outstanding stability.

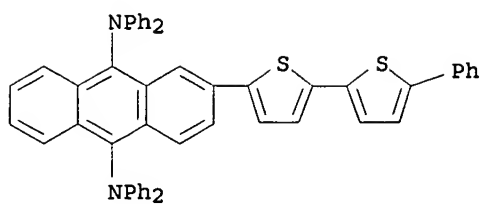
IT 198-55-0, Perylene  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(light emitting material; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

RN 198-55-0 HCAPLUS  
CN Perylene (8CI, 9CI) (CA INDEX NAME)



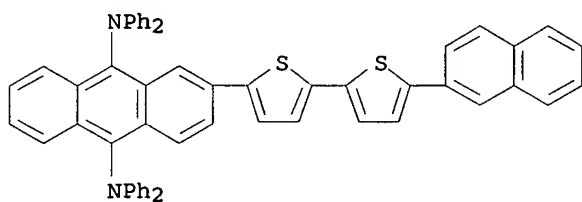
IT 624744-13-4 624744-14-5 624744-15-6  
624744-19-0 624744-20-3 624744-21-4  
RL: TEM (Technical or engineered material use); USES (Uses)  
(preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

RN 624744-13-4 HCAPLUS  
CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl-2-(5'-phenyl[2,2'-bithiophen]-5-yl)- (9CI) (CA INDEX NAME)



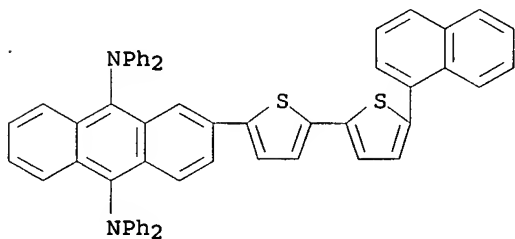
RN 624744-14-5 HCAPLUS

CN 9,10-Anthracenediamine, 2-[5'-(2-naphthalenyl)[2,2'-bithiophen]-5-yl]-N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



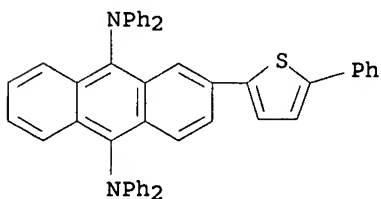
RN 624744-15-6 HCAPLUS

CN 9,10-Anthracenediamine, 2-[5'-(1-naphthalenyl)[2,2'-bithiophen]-5-yl]-N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



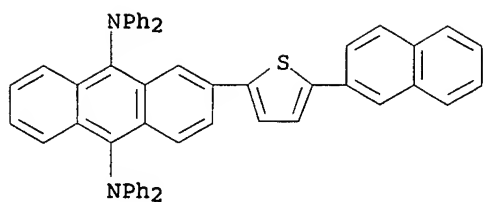
RN 624744-19-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl-2-(5-phenyl-2-thienyl)- (9CI) (CA INDEX NAME)



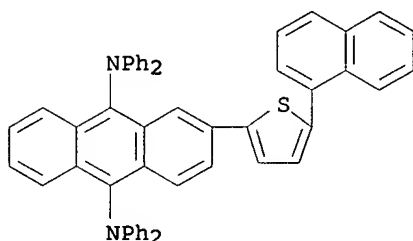
RN 624744-20-3 HCAPLUS

CN 9,10-Anthracenediamine, 2-[5-(2-naphthalenyl)-2-thienyl]-N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



RN 624744-21-4 HCAPLUS

CN 9,10-Anthracenediamine, 2-[5-(1-naphthalenyl)-2-thienyl]-N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



IC ICM C07D333-44

ICS C07D409-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 27, 74, 76

ST org electroluminescent device emissive film substituted anthracene

IT Luminescent substances

(electroluminescent; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

IT Electroluminescent devices

(green-emitting; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

IT Electron transport

Hole transport

(materials for; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

IT Electronic device fabrication

Fluorescent substances

Glass substrates

Ink-jet printing

Phosphorescent substances

Vapor deposition process

(preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

IT Electroluminescent devices

(red-emitting; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

IT Coating process

(spin; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

IT Electroluminescent devices

(thin-film, organic; preparation of new organic compds. for

- electroluminescence and organic electroluminescent devices)
- IT 1047-16-1 7520-01-6 19205-19-7 38210-35-4D, metal pentanedione complexes 38215-36-0 85642-10-0 85642-11-1 94928-86-6 121239-82-5 126442-46-4 155306-71-1 624744-71-4 624744-72-5 624744-73-6  
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (dopant; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)
- IT 198-55-0, Perylene 51325-91-8, DCM1 51325-95-2, DCM2 144810-07-1 200052-70-6, DCJTB  
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (light emitting material; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)
- IT 91-64-5D, Coumarin, derivs. 517-51-1, Rubrene 1047-16-1D, Quinacridone, derivs. 7385-67-3, Nile red 26147-89-7, [1,2,5]Thiadiazolo[3,4-c]pyridine  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (light emitting material; preparation of new organic compds. for electroluminescence and organic electroluminescent devices)
- IT 572-83-8P, 2-Bromoanthraquinone 633-70-5P, 2,6-Dibromoanthraquinone 825-55-8P, 2-Phenylthiophene 29488-24-2P, 5-Bromo-2-phenylthiophene 106925-97-7P 306934-95-2P 474687-62-2P 474687-82-6P 474688-70-5P 474688-76-1P 474688-77-2P 624744-59-8P 624744-60-1P 624744-61-2P 624744-62-3P 624744-63-4P 624744-64-5P 624744-65-6P 624744-66-7P 624744-67-8P 624744-68-9P 624744-69-0P 624744-70-3P  
 RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (preparation of new organic compds. for electroluminescence and organic electroluminescent devices)
- IT 474688-22-7P 624743-68-6P 624743-76-6P 624743-78-8P 624743-83-5P 624743-85-7P 624743-86-8P 624743-88-0P 624743-90-4P  
 RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (preparation of new organic compds. for electroluminescence and organic electroluminescent devices)
- IT 76-86-8, Triphenylsilyl chloride 98-80-6, Phenylboronic acid 117-79-3, 2-Aminoanthraquinone 121-43-7, Trimethyl borate 131-09-9, 2-Chloroanthraquinone 131-14-6, 2,6-Diaminoanthraquinone 534-85-0, N-Phenyl-1,2-phenylenediamine 580-13-2, 2-Bromonaphthalene 1003-09-4, 2-Bromothiophene 1564-64-3, 9-Bromoanthracene 2052-07-5, 2-Bromobiphenyl 4805-22-5, 5,5'-Dibromo-2,2'-bithiophene 6165-68-0, Thiophene-2-boronic acid 32316-92-0, Naphthalene-2-boronic acid 73183-34-3 87199-17-5, 4-Formylphenylboronic acid  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of new organic compds. for electroluminescence and organic electroluminescent devices)
- IT 624744-74-7P 624744-77-0P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation of new organic compds. for electroluminescence and organic electroluminescent devices)
- IT 624744-75-8P 624744-76-9P 624744-78-1P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of new organic compds. for electroluminescence and organic electroluminescent devices)

and organic electroluminescent devices)

IT 474688-16-9 474688-21-6 624743-65-3 624743-66-4  
624743-67-5 624743-69-7 624743-70-0 624743-71-1  
624743-72-2 624743-73-3 624743-74-4 624743-75-5  
624743-77-7 624743-79-9 624743-80-2 624743-81-3  
624743-82-4 624743-84-6 624743-87-9 624743-89-1  
624743-91-5 624743-92-6 624743-93-7 624743-94-8  
624743-95-9 624743-96-0 624743-97-1 624743-98-2  
624743-99-3 624744-00-9 624744-01-0 624744-02-1  
624744-03-2 624744-04-3 624744-05-4 624744-06-5  
624744-07-6 624744-08-7 624744-09-8 624744-10-1  
624744-11-2 624744-12-3 624744-13-4  
624744-14-5 624744-15-6 624744-16-7  
624744-17-8 624744-18-9 624744-19-0  
624744-20-3 624744-21-4 624744-22-5  
624744-23-6 624744-24-7 624744-25-8 624744-26-9  
624744-27-0 624744-28-1 624744-29-2 624744-30-5  
624744-31-6 624744-32-7 624744-33-8 624744-34-9  
624744-35-0 624744-36-1 624744-37-2 624744-38-3  
624744-39-4 624744-40-7 624744-41-8 624744-42-9  
624744-43-0 624744-44-1 624744-45-2 624744-46-3  
624744-47-4 624744-48-5 624744-49-6 624744-50-9  
624744-51-0 624744-52-1 624744-53-2 624744-54-3  
624744-55-4 624744-56-5 624744-57-6

RL: TEM (Technical or engineered material use); USES (Uses)  
(preparation of new organic compds. for electroluminescence  
and organic electroluminescent devices)

IT 50926-11-9, Indium tin oxide

RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)

(substrate; preparation of new organic compds. for  
electroluminescence and organic electroluminescent  
devices)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L94 ANSWER 9 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:723685 HCAPLUS

DOCUMENT NUMBER: 139:252299

TITLE: Diphenylfluorene derivatives and organic  
electroluminescence devices using them  
with high luminescence efficiency

INVENTOR(S): Ishida, Tsutomu; Shimamura, Takehiko; Tanabe,  
Yoshimitsu; Totani, Yoshiyuki; Nakatsuka,  
Masakatsu

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 40 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

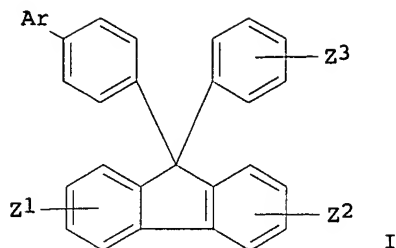
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003261472	A2	20030916	JP 2002-62101	2002 0307

PRIORITY APPLN. INFO.: <--  
JP 2002-62101

2002  
0307

OTHER SOURCE(S): MARPAT 139:252299

GI



AB The electroluminescence devices contain the diphenylfluorene derivs. I (Ar = anthryl; Z1-3 = H, halo, alkyl, alkoxy, aryl, aralkyl) between a pair of electrodes. The electroluminescence devices may further contain luminescent organic metal complexes and triarylamine.

IT 460347-61-9P 597554-04-6P 597554-05-7P  
597554-06-8P 597554-07-9P 597554-10-4P  
597554-11-5P 597554-14-8P 597554-15-9P  
597554-21-7P 597554-23-9P

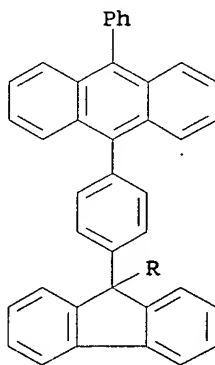
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(anthrylphenylphenylfluorene derivs. for organic EL devices with high luminescence efficiency)

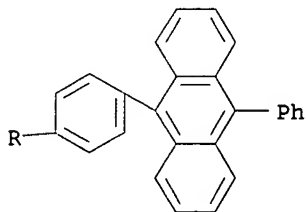
RN 460347-61-9 HCAPLUS

CN Anthracene, 9,9'-(9H-fluoren-9-ylidenedi-4,1-phenylene)bis[10-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

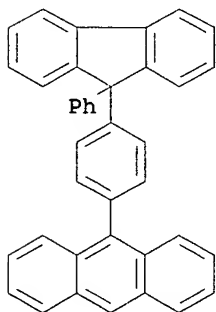


PAGE 2-A

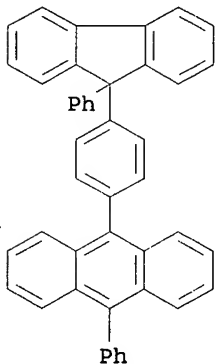




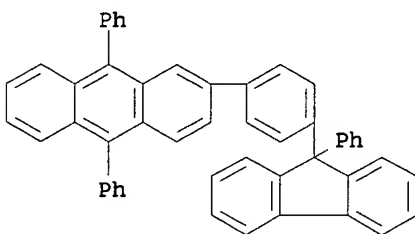
RN 597554-04-6 HCAPLUS  
CN Anthracene, 9-[4-(9-phenyl-9H-fluoren-9-yl)phenyl]- (9CI) (CA INDEX NAME)



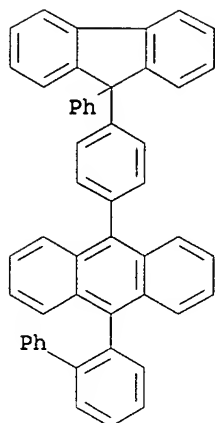
RN 597554-05-7 HCAPLUS  
CN Anthracene, 9-phenyl-10-[4-(9-phenyl-9H-fluoren-9-yl)phenyl]- (9CI) (CA INDEX NAME)



RN 597554-06-8 HCAPLUS  
CN Anthracene, 9,10-diphenyl-2-[4-(9-phenyl-9H-fluoren-9-yl)phenyl]- (9CI) (CA INDEX NAME)

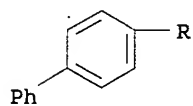
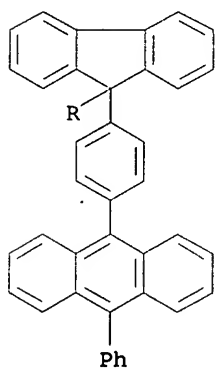


RN 597554-07-9 HCAPLUS  
CN Anthracene, 9-[1,1'-biphenyl]-2-yl-10-[4-(9-phenyl-9H-fluoren-9-yl)phenyl]- (9CI) (CA INDEX NAME)



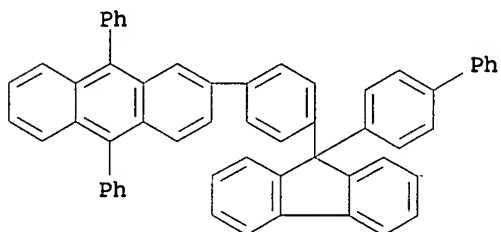
RN 597554-10-4 HCAPLUS

CN Anthracene, 9-[4-(9-[1,1'-biphenyl]-4-yl)-9H-fluoren-9-yl]phenyl-10-phenyl- (9CI) (CA INDEX NAME)



RN 597554-11-5 HCAPLUS

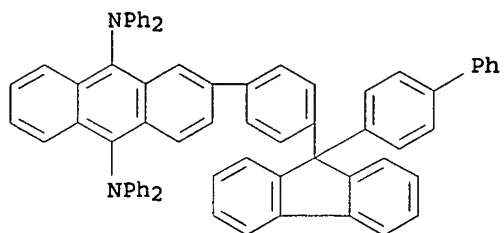
CN Anthracene, 2-[4-(9-[1,1'-biphenyl]-4-yl)-9H-fluoren-9-yl]phenyl-9,10-diphenyl- (9CI) (CA INDEX NAME)



RN 597554-14-8 HCAPLUS

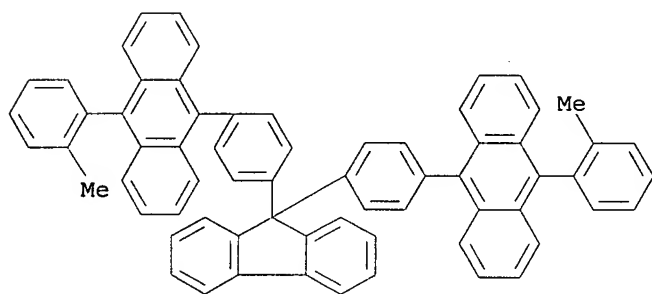
CN 9,10-Anthracenediamine, 2-[4-(9-[1,1'-biphenyl]-4-yl)-9H-fluoren-9-

yl)phenyl]-N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



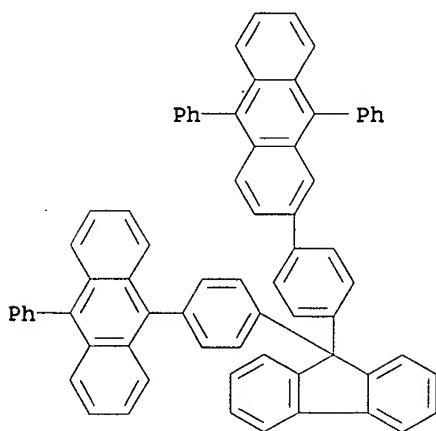
RN 597554-15-9 HCAPLUS

Anthracene, 9,9'-(9H-fluoren-9-ylidenedi-4,1-phenylene)bis[10-(2-methylphenyl)- (9CI) (CA INDEX NAME)



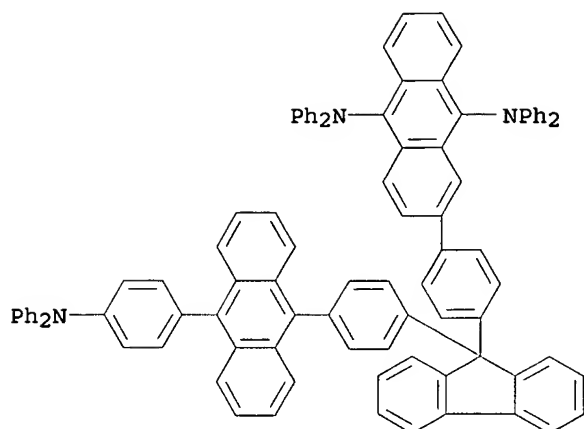
RN 597554-21-7' HCAPLUS

CN Anthracene, 9,10-diphenyl-2-[4-[9-[4-(10-phenyl-9-anthracenyl)phenyl]-9H-fluoren-9-yl]phenyl]- (9CI) (CA INDEX NAME)



RN 597554-23-9 HCAPLUS

9,10-Anthracenediamine, 2-[4-[9-[4-[10-[4-(diphenylamino)phenyl]-9-anthracenyl]phenyl]-9H-fluoren-9-yl]phenyl]-N,N,N',N'-tetraphenyl-(9CI) (CA INDEX NAME)

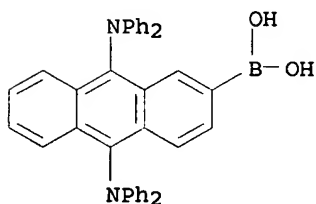


IT 597554-01-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(anthrylphenylphenylfluorene derivs. for organic EL  
devices with high luminescence efficiency)

RN 597554-01-3 HCAPLUS

CN Boronic acid, [9,10-bis(diphenylamino)-2-anthracenyl]- (9CI) (CA  
INDEX NAME)



IC ICM C07C013-573

ICS C07C211-54; C07C211-61; C09K011-06; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

ST fluorene phenyl anthryl org electroluminescence  
device

IT Electroluminescent devices

(anthrylphenylphenylfluorene derivs. for organic EL  
devices with high luminescence efficiency)

IT 460347-61-9P 597554-04-6P 597554-05-7P

597554-06-8P 597554-07-9P 597554-08-0P

597554-09-1P 597554-10-4P 597554-11-5P

597554-12-6P 597554-13-7P 597554-14-8P

597554-15-9P 597554-16-0P 597554-17-1P 597554-18-2P

597554-19-3P 597554-20-6P 597554-21-7P 597554-22-8P

597554-23-9P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)

(anthrylphenylphenylfluorene derivs. for organic EL  
devices with high luminescence efficiency)

IT 98-80-6, Phenylboric acid 100622-34-2 201802-67-7

334658-75-2 400607-48-9 474115-76-9 597553-97-4

597553-98-5 597553-99-6 597554-00-2 597554-01-3

597554-02-4 597554-03-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(anthrylphenylphenylfluorene derivs. for organic EL  
devices with high luminescence efficiency)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 24601-13-6,  
Bis(2-methyl-8-quinolinolato)aluminum- $\mu$ -oxo-bis(2-methyl-8-  
quinolinolato)aluminum 65181-78-4 123847-85-8,  
4,4'-Bis[N-phenyl-N-(1''-naphthyl)amino]biphenyl 124729-98-2,  
4,4',4'''-Tris [N-(3'''-methylphenyl)-N-phenylamino]triphenylamine  
146162-54-1, Bis(2-methyl-8-quinolinolato)(4-  
phenylphenolato)aluminum  
RL: DEV (Device component use); USES (Uses)  
(luminescent layer containing;  
anthrylphenylphenylfluorene derivs. for organic EL  
devices with high luminescence efficiency)

L94 ANSWER 10 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:628443 HCAPLUS

DOCUMENT NUMBER: 139:171119

TITLE: Organic electroluminescent device  
comprising coupled anthracene  
fluorene derivative and with  
amino-substituted hydrocarbon

INVENTOR(S): Totani, Yoshiyuki; Ishida, Tsutomu; Shimamura,  
Takehiko; Tanabe, Yoshimitsu; Nakatsuka,  
Masakatsu

PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 122 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2003229273	A2	20030815	JP 2002-25736	2002 0201

PRIORITY APPLN. INFO.: <--  
JP 2002-25736

2002  
0201

OTHER SOURCE(S): MARPAT 139:171119

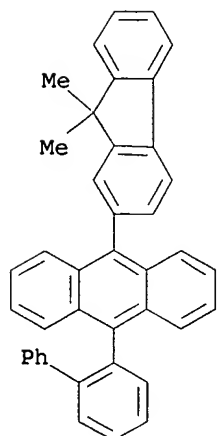
AB The invention refers to an organic electroluminescent  
device comprising one or two fluorene rings directed  
bonded to an anthracene and a amino-substituted  
hydrocarbon.

IT 400605-92-7 400605-99-4 400606-62-4  
400606-71-5 400606-72-6 400606-81-7  
577795-77-8 577795-78-9 577795-80-3  
577795-81-4

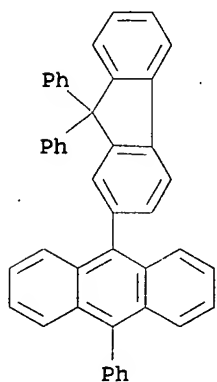
RL: DEV (Device component use); USES (Uses)  
(comps. with fluorenes; organic  
electroluminescent device comprising coupled  
anthracene fluorene derivative and with  
amino-substituted hydrocarbon)

RN 400605-92-7 HCAPLUS

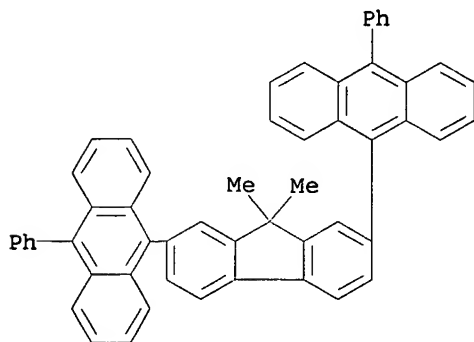
CN Anthracene, 9-[1,1'-biphenyl]-2-yl-10-(9,9-dimethyl-9H-fluoren-2-  
yl)- (9CI) (CA INDEX NAME)



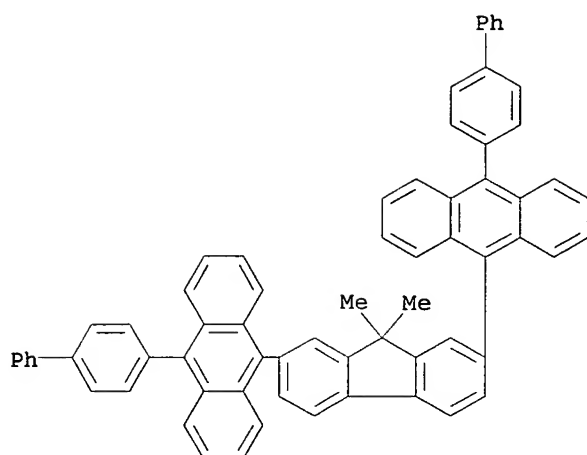
RN 400605-99-4 HCAPLUS  
 CN Anthracene, 9-(9,9-diphenyl-9H-fluorene-2-yl)-10-phenyl- (9CI) (CA INDEX NAME)



RN 400606-62-4 HCAPLUS  
 CN Anthracene, 9,9'-(9,9-dimethyl-9H-fluorene-2,7-diyl)bis[10-phenyl- (9CI) (CA INDEX NAME)

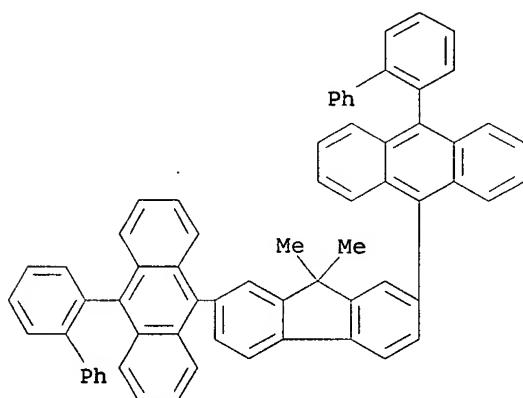


RN 400606-71-5 HCAPLUS  
 CN Anthracene, 9,9'-(9,9-dimethyl-9H-fluorene-2,7-diyl)bis[10-[1,1'-biphenyl]-4-yl- (9CI) (CA INDEX NAME)



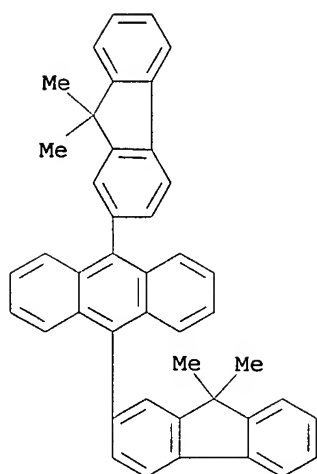
RN 400606-72-6 HCAPLUS

CN Anthracene, 9,9'-(9,9-dimethyl-9H-fluorene-2,7-diyl)bis[10-[1,1'-biphenyl]-2-yl]- (9CI) (CA INDEX NAME)



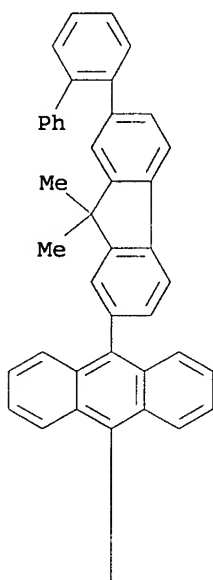
RN 400606-81-7 HCAPLUS

CN Anthracene, 9,10-bis(9,9-dimethyl-9H-fluorene-2-yl)- (9CI) (CA INDEX NAME)



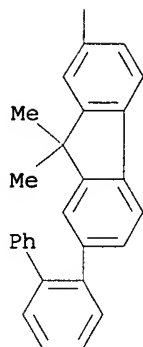
RN 577795-77-8 HCAPLUS  
CN Anthracene, 9,10-bis(7-[1,1'-biphenyl]-2-yl)-9,9-dimethyl-9H-fluorene-2-yl)- (9CI) (CA INDEX NAME)

PAGE 1-A



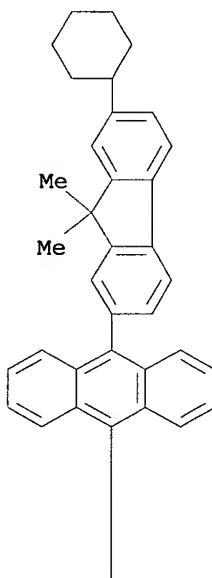


PAGE 2-A

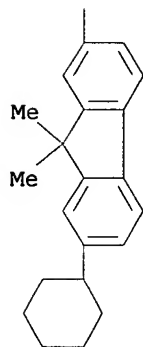


RN 577795-78-9 HCAPLUS  
CN Anthracene, 9,10-bis(7-cyclohexyl-9,9-dimethyl-9H-fluoren-2-yl)-  
(9CI) (CA INDEX NAME)

PAGE 1-A

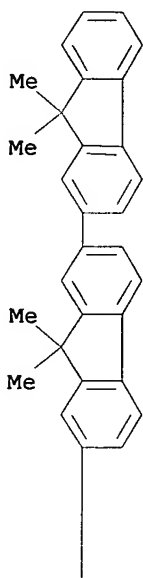


PAGE 2-A

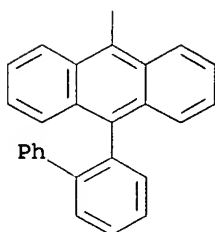


RN 577795-80-3 HCAPLUS  
CN Anthracene, 9-[1,1'-biphenyl]-2-yl-10-(9,9,9',9'-tetramethyl[2,2'-bi-9H-fluoren]-7-yl)- (9CI) (CA INDEX NAME)

PAGE 1-A

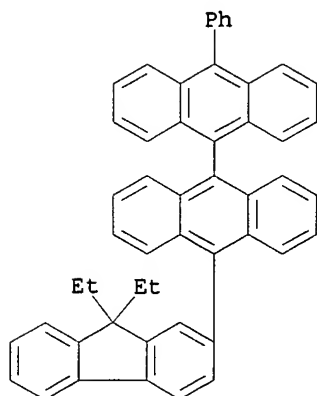


PAGE 2-A

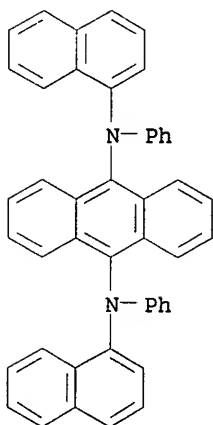


RN 577795-81-4 HCAPLUS  
CN 9,9'-Bianthracene, 10-(9,9-diethyl-9H-fluoren-2-yl)-10'-phenyl-

(9CI) (CA INDEX NAME)

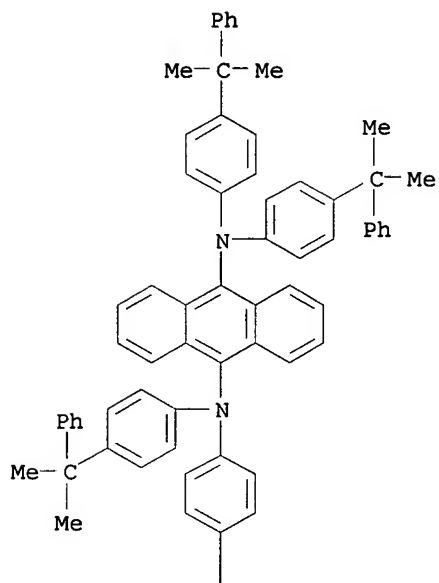


IT 177799-14-3 177799-15-4 177799-16-5  
 189263-89-6 189263-91-0 400606-21-5  
 400606-86-2 400606-87-3 577795-82-5  
 RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent device comprising coupled  
 anthracene fluorene derivative and with  
 amino-substituted hydrocarbon)  
 RN 177799-14-3 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
 (9CI) (CA INDEX NAME)

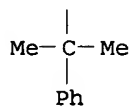


RN 177799-15-4 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-  
 phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

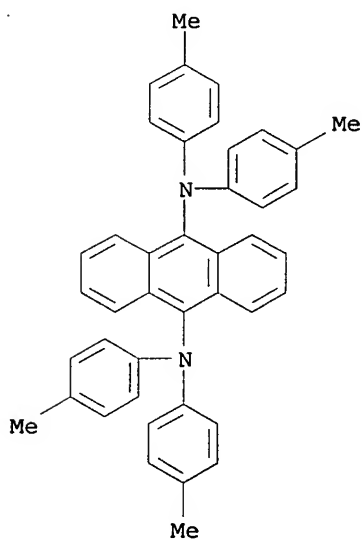
PAGE 1-A



PAGE 2-A

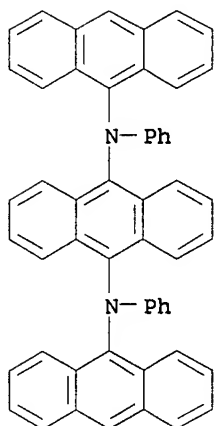


RN 177799-16-5 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
 (CA INDEX NAME)

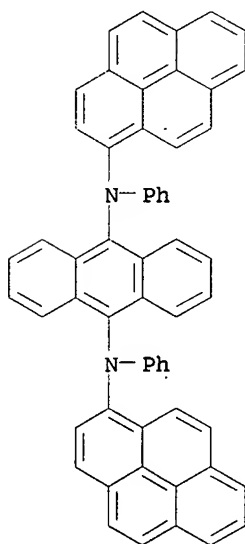


RN 189263-89-6 HCAPLUS

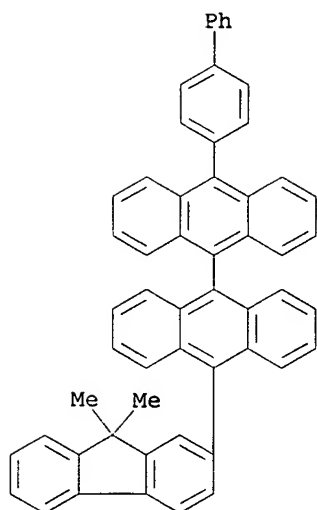
CN 9,10-Anthracenediamine, N,N'-di-9-anthracenyl-N,N'-diphenyl- (9CI)  
(CA INDEX NAME)



RN 189263-91-0 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-di-1-pyrenyl- (9CI)  
(CA INDEX NAME)

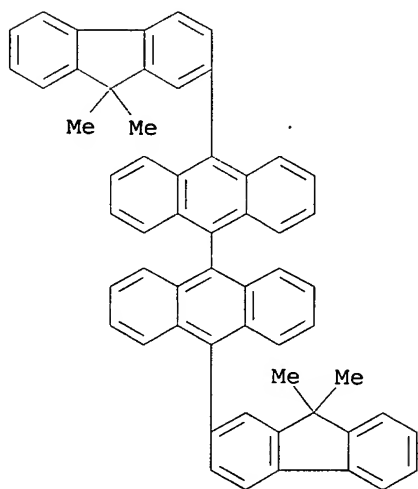


RN 400606-21-5 HCAPLUS  
CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-4-yl-10'-(9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



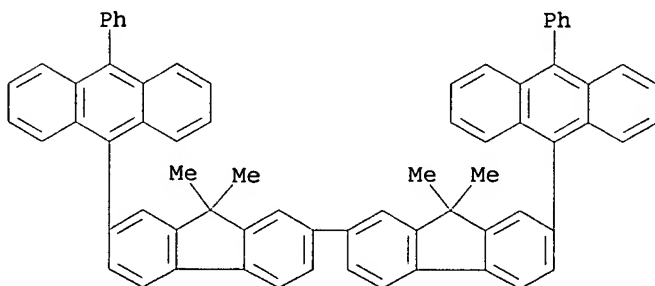
RN 400606-86-2 HCAPLUS

CN 9,9'-Bianthracene, 10,10'-bis(9,9-dimethyl-9H-fluorene-2-yl)- (9CI)  
(CA INDEX NAME)

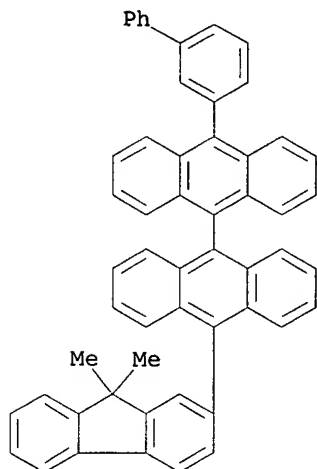


RN 400606-87-3 HCAPLUS

CN Anthracene, 9,9'-(9,9,9',9'-tetramethyl[2,2'-bi-9H-fluorene]-7,7'-diyl)bis[10-phenyl]- (9CI) (CA INDEX NAME)



RN 577795-82-5 HCAPLUS  
 CN 9,9'-Bianthracene, 10-[1,1'-biphenyl]-3-yl-10'-(9,9-dimethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST **electroluminescent device anthracene fluorene**  
 IT **Electroluminescent devices**  
     (organic **electroluminescent** device comprising coupled **anthracene fluorene** derivative and with amino-substituted hydrocarbon)  
 IT 400605-92-7 400605-99-4 400606-62-4  
 400606-71-5 400606-72-6 400606-81-7  
 577795-75-6 577795-76-7 577795-77-8  
 577795-78-9 577795-79-0 577795-80-3  
 577795-81-4  
 RL: DEV (Device component use); USES (Uses)  
     (compds. with **fluorenes**; organic **electroluminescent** device comprising coupled **anthracene fluorene** derivative and with amino-substituted hydrocarbon)  
 IT 96773-85-2 144810-07-1 150220-33-0 150220-36-3 150973-91-4  
 177799-14-3 177799-15-4 177799-16-5  
 189263-89-6 189263-91-0 194295-85-7  
 194295-98-2 194296-12-3 194296-19-0 400606-21-5  
 400606-86-2 400606-87-3 522615-57-2  
 577795-82-5 577795-83-6 577795-84-7 577795-85-8  
 577795-86-9 577795-87-0 577795-88-1  
 RL: DEV (Device component use); USES (Uses)  
     (organic **electroluminescent** device comprising coupled **anthracene fluorene** derivative and with amino-substituted hydrocarbon)  
 L94 ANSWER 11 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:374064 HCAPLUS  
 DOCUMENT NUMBER: 138:376535  
 TITLE: Organic **electroluminescent** display having red **light-emitting** layer  
 INVENTOR(S): Oh, Hyoung Yun; Lee, Sung Koo; Park, Chung Gun; Seo, Jeong Dea; Kim, Myung Seop

PATENT ASSIGNEE(S): LG Electrics Co., Ltd., S. Korea  
 SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003142269	A2	20030516	JP 2002-293373	2002 1007
KR 2003035283	A	20030509	KR 2001-67267	2001 1030
US 2003118866	A1	20030626	US 2002-254999	2002 0926
EP 1317005	A2	20030604	EP 2002-23135	2002 1015
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK	A	20030507	CN 2002-148125	2002 1030
CN 1416301	A	20030507	CN 2002-148125	2002 1030
PRIORITY APPLN. INFO.:			KR 2001-67267	2001 1030

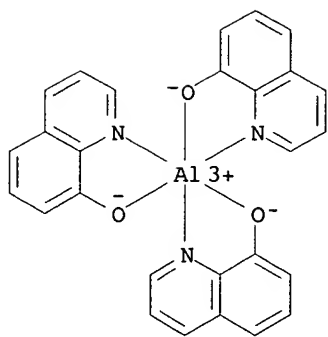
OTHER SOURCE(S): MARPAT 138:376535

AB The display has a red **light-emitting** layer between electrodes, and the layer contains a guest substance of red-emitting substance and  $\geq 2$  host substances. Preferably, one of the host substances is a (substituted) **quinoline** derivative or a compound represented by  $(L1L2N)m-z-(NL3L4)n$  [ $m + n = 1-8$ ;  $z = A1, A2QA3$ ;  $A1 =$  (substituted) aromatic hydrocarbylene, heterocyclic group, aliphatic hydrocarbylene;  $A2-3 =$  (substituted) aromatic hydrocarbylene, heterocyclic group;  $A1-3$  are connected to N via aliphatic hydrocarbylene, amido, or imine;  $Q =$  (substituted) aromatic hydrocarbylene, heterocyclic ring, aliphatic hydrocarbylene, Group IIIA, IVA, VA, or VIA element;  $Q$  is connected to  $A2-3$  via (substituted) aliphatic hydrocarbylene, Group IIIA, IVA, VA, or VIA element, amido, ester, carbonyl, azo, imine;  $L1-4 =$  (substituted) aromatic hydrocarbyl, heterocyclic group, aliphatic hydrocarbyl; silyl, H]. The display **emits red light** with high **luminescent** efficiency.

IT 2085-33-8, Alq3 177799-11-0 177799-16-5  
 473717-08-7  
 RL: DEV (Device component use); USES (Uses)  
 (host; organic **electroluminescent** display having red **light-emitting** layer containing host substances for high **luminescent** efficiency)

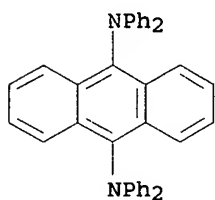
RN 2085-33-8 HCAPLUS  
 CN Aluminum, tris(8-quinolinolato- $\kappa N1, \kappa O8$ )- (9CI) (CA INDEX NAME)





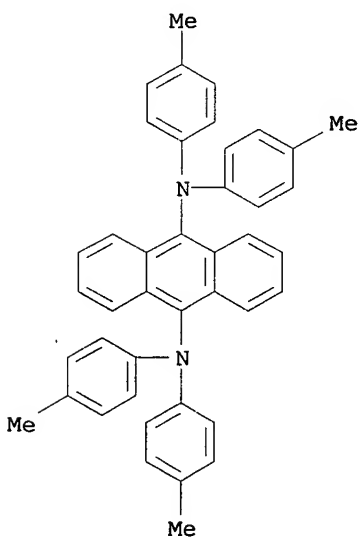
RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



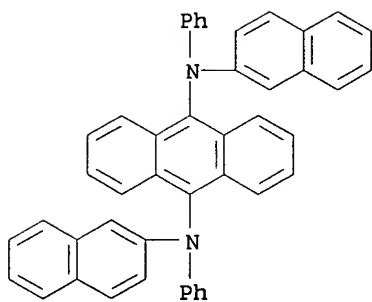
RN 177799-16-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI) (CA INDEX NAME)



RN 473717-08-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-2-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

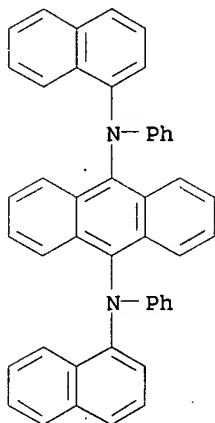


IT 177799-14-3P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (host; organic electroluminescent display having red light-emitting layer containing host substances for high luminescent efficiency)

RN 177799-14-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
 (9CI) (CA INDEX NAME)

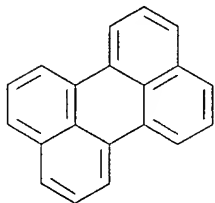


IT 198-55-0, Perylene

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic electroluminescent display having red light-emitting layer containing host substances for high luminescent efficiency)

RN 198-55-0 HCAPLUS

CN Perylene (8CI, 9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST org electroluminescent display red light  
emitting substance; host guest red emitting substance  
electroluminescent display

IT Electroluminescent devices  
(displays; organic electroluminescent display having red  
light-emitting layer containing host substances  
for high luminescent efficiency)

IT Luminescent screens  
(electroluminescent; organic  
electroluminescent display having red light-  
emitting layer containing host substances for high  
luminescent efficiency)

IT Luminescent substances  
(organic electroluminescent display having red  
light-emitting layer containing host substances  
for high luminescent efficiency)

IT 91-64-5D, Coumarin, derivs. 226-05-1D, 7H-Benzo[c]thioxanthene,  
derivs. 7385-67-3D, Nile red, derivs. 13558-31-1D, derivs.  
51325-91-8D, DCM, derivs. 54300-60-6D, Pyrromethene, derivs.  
200052-70-6  
RL: DEV (Device component use); USES (Uses)  
(guest; organic electroluminescent display having red  
light-emitting layer containing host substances  
for high luminescent efficiency)

IT 2085-33-8, Alq3 13978-85-3 25387-93-3 62556-02-9  
67952-28-7, Magnesium 8-hydroxyquinolate 127697-06-7  
127697-08-9 138685-19-5 139255-20-2 177799-11-0  
177799-16-5 220721-66-4 220721-68-6 223735-42-0  
223735-62-4 227013-26-5 252755-19-4 253867-48-0  
340162-05-2 473717-08-7 522652-78-4 522652-79-5  
522652-80-8 522652-81-9 522652-82-0 522652-83-1  
522652-84-2 522652-85-3 522652-86-4 522652-87-5  
522652-88-6 522652-89-7 522652-90-0 522652-91-1  
522652-92-2 522652-93-3 522652-94-4 522652-95-5  
522652-96-6 522652-98-8 522652-99-9 522653-00-5  
522653-01-6 522653-02-7 522653-03-8 522653-04-9  
522653-05-0 522653-06-1 522653-07-2 522653-08-3  
522653-09-4 522653-10-7 522653-11-8 522653-12-9  
522653-13-0 522653-14-1 522653-15-2 522653-16-3  
522653-17-4 522653-18-5 522653-19-6 522653-20-9  
522653-21-0 522653-22-1  
RL: DEV (Device component use); USES (Uses)  
(host; organic electroluminescent display having red  
light-emitting layer containing host substances  
for high luminescent efficiency)

IT 177799-14-3P 227009-35-OP 522652-77-3P 522652-97-7P  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)  
(host; organic electroluminescent display having red  
light-emitting layer containing host substances  
for high luminescent efficiency)

IT 23683-68-3P 36809-26-4P 201802-67-7P  
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP  
(Preparation); RACT (Reactant or reagent)  
(organic electroluminescent display having red  
light-emitting layer containing host substances  
for high luminescent efficiency)

IT 90-30-2, N-Phenyl-1-naphthylamine 106-40-1, p-Bromoaniline  
121-43-7, Trimethylborate 122-39-4, Diphenylamine, reactions  
198-55-0, Perylene 523-27-3,  
9,10-Dibromoanthracene 591-50-4, Iodobenzene 4181-05-9,  
4-Diphenylaminobenzaldehyde 57191-89-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic electroluminescent display having red

light-emitting layer containing host substances  
for high luminescent efficiency)

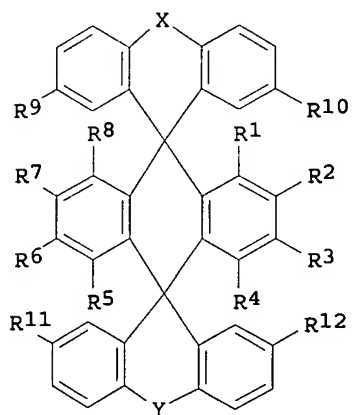
L94 ANSWER 12 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2003:74514 HCAPLUS  
DOCUMENT NUMBER: 138:97990  
TITLE: Bispirocyclic ring derivatives and organic  
electroluminescent devices using them  
INVENTOR(S): Li, Bin; Qiu, Yong; Wang, Fei  
PATENT ASSIGNEE(S): Qinghua Univ., Peop. Rep. China  
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu,  
77 pp.  
CODEN: CNXXEV  
DOCUMENT TYPE: Patent  
LANGUAGE: Chinese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1338499	A	20020306	CN 2001-130676	2001 0820

&lt;--

PRIORITY APPLN. INFO.:	CN 2001-130676	2001 0820
------------------------	----------------	--------------

OTHER SOURCE(S): MARPAT 138:97990  
GI



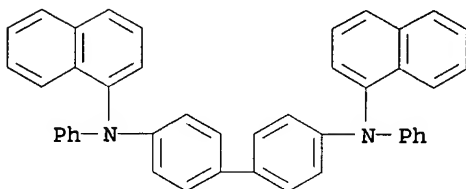
I

AB The invention relates to an organic electroluminescent device comprising a pair of electrodes sandwiching  $\geq 1$  layer(s) containing  $\geq 1$  bispirocyclic ring derivs. I [R1-12 = H, or C1-24 or other atoms-containing moiety; such as (iso)alkyl, OH, alkoxy, NO, CN, amino, S, halo, aromatic, (un)substituted heterocyclyl; X, Y = bond, O, S, NR, R-C-R (R = H or C1-24 or other atoms-containing moiety)]. The Markush structures were claimed. The electroluminescent device was manufactured by vacuum vapor deposition of the synthetic electroluminescent material on In<sub>2</sub>O<sub>3</sub>-SnO<sub>2</sub> film (as anode)-deposited glass sheet and then vacuum vapor deposition of Mg/Ag (10:1) layer (as cathode) on.

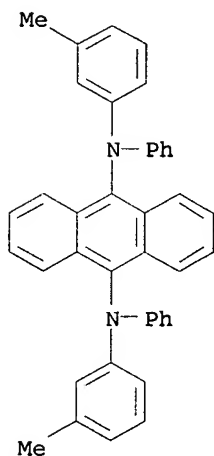
IT 123847-85-8, NPB 189263-81-8

RL: RCT (Reactant); RACT (Reactant or reagent)  
(novel bispirocyclo derivative for organic electroluminescent devices)

RN 123847-85-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)

RN 189263-81-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(3-methylphenyl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)

IC ICM C09K011-06

ICS C07D519-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 27

ST bispirocyclic deriv electroluminescent material  
synthesis device

IT Luminescent substances

(electroluminescent; anthracene derivs. as  
high-performance host materials of)

IT Electroluminescent devices

(novel bispirocyclo derivative for)

IT 159-54-6 159-56-8 1312-43-2, Indium oxide (In2O3)  
18282-10-5, Tin oxide (SnO2) 484687-26-5 484687-27-6  
484687-28-7 484687-29-8 484687-30-1 484687-31-2  
484687-32-3 484687-33-4 484687-34-5 484687-35-6  
484687-36-7 484687-37-8 484687-38-9 484687-39-0  
484687-40-3 484687-41-4 484687-42-5 484687-43-6  
484687-44-7 484687-45-8 484687-46-9 484687-47-0  
484687-48-1 484687-49-2 484687-50-5 484687-51-6  
484687-52-7 484687-53-8 484687-54-9 484687-55-0  
484687-56-1 484687-57-2 484687-58-3 484687-59-4

484687-60-7	484687-61-8	484687-62-9	484687-63-0
484687-64-1	484687-65-2	484687-66-3	484687-67-4
484687-68-5	484687-69-6	484687-70-9	484687-71-0
484687-72-1	484687-73-2	484687-74-3	484687-75-4
484687-76-5	484687-77-6	484687-78-7	484687-79-8
484687-80-1	484687-81-2	484687-82-3	484687-83-4
484687-84-5	484687-85-6	484687-86-7	484687-87-8
484687-88-9	484687-89-0	484687-90-3	484687-91-4
484687-92-5	484687-93-6	484687-94-7	484687-95-8
484687-96-9	484687-97-0	484687-98-1	484687-99-2
484688-00-8	484688-01-9	484688-02-0	484688-03-1
484688-04-2	484688-05-3	484688-06-4	484688-07-5
484688-08-6	484688-09-7	484688-10-0	484688-11-1
484688-12-2	484688-13-3	484688-14-4	484688-15-5
484688-16-6	484688-17-7	484688-18-8	484688-19-9
484688-20-2	484688-21-3	484688-22-4	484688-23-5
484688-24-6	484688-25-7	484688-26-8	484688-27-9
484688-28-0	484688-29-1	484688-30-4	484688-31-5
484688-32-6	484688-33-7	484688-34-8	484688-35-9
484688-36-0	484688-38-2	484688-39-3	484688-40-6
484688-41-7	484688-42-8	484688-43-9	484688-44-0
484688-45-1	484688-46-2	484688-47-3	484688-48-4
484688-49-5	484688-50-8	484688-51-9	484688-52-0
484688-53-1	484688-54-2	484688-55-3	484688-56-4
484688-57-5	484688-58-6	484688-59-7	484688-60-0
484688-61-1	484688-62-2	484688-63-3	484688-64-4
484688-65-5			

RL: DEV (Device component use); USES (Uses)  
(novel bispirocyclo derivative for organic electroluminescent devices)

IT 2113-51-1 12614-86-7, Magnesium alloy, Mg 90, Ag 10  
123847-85-8, NPB 189263-81-8

RL: RCT (Reactant); RACT (Reactant or reagent)  
(novel bispirocyclo derivative for organic electroluminescent devices)

L94 ANSWER 13 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:698417 HCAPLUS

DOCUMENT NUMBER: 137:330598

TITLE: Diaminoanthracene Derivatives as  
High-Performance Green Host  
Electroluminescent Materials

AUTHOR(S): Yu, Ming-Xin; Duan, Jiun-Pey; Lin, Chien-Hong;  
Cheng, Chien-Hong; Tao, Yu-Tai

CORPORATE SOURCE: Department of Chemistry, Tsing Hua University,  
Hsinchu, 300, Taiwan

SOURCE: Chemistry of Materials (2002),  
14(9), 3958-3963

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Diaminoanthracene derivs. 9,10-bis(1-naphthylphenylamino)  
anthracene ( $\alpha$ -NPA), 9,10-bis(2-naphthylphenylamino)  
anthracene ( $\beta$ -NPA), 9,10-bis(m-tolylphenylamino)  
anthracene (TPA), and 9,10-bis(diphenylamino)  
anthracene (PPA) were conveniently synthesized from the  
corresponding diarylamine and 9,10-dibromoanthracene in the  
presence of Pd(OAc)<sub>2</sub>, tri-tert-butylphosphine, and sodium  
tert-butoxide in o-xylene. Electroluminescent devices  
using  $\alpha$ -NPA,  $\beta$ -NPA, and PPA as the hole transporters  
and host emitters were made. Devices consisting of  
diaminoanthracene ( $\alpha$ -NPA,  $\beta$ -NPA, or PPA)/Alq<sub>3</sub> were  
shown to emit intensive green light from the  
diaminoanthracene layer instead of the Alq<sub>3</sub> layer. The device  
performance can be further improved by employing CuPc as the

hole-injection layer,  $\alpha$ -NPB or m-MTDATA as the hole-transporting layer, and Alq3 or TPBI as the electron-transporting layer. Very high brightness, current, and power efficiencies and excellent CIE coordinates can be achieved by a suitable combination of these layers. For example, device K, which consists of m-MTDATA(20 nm)/ $\beta$ -NPA(40 nm)/TPBI(50 nm), emits green light at 530 nm and shows a maximum external quantum efficiency of 3.68%, current efficiency of 14.79 cd/A, power efficiency of 7.76 lm/W, and maximum brightness of 64991 cd/m<sup>2</sup>.

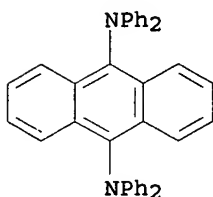
IT 177799-11-0P 177799-14-3P 473717-08-7P

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(diaminoanthracene derivs. as high-performance green host electroluminescent materials)

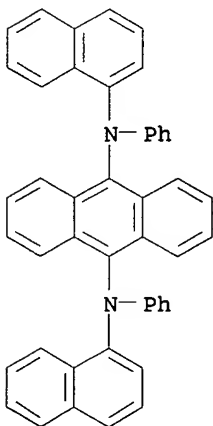
RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



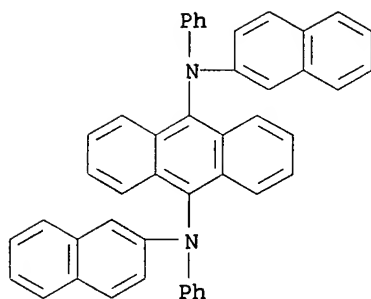
RN 177799-14-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



RN 473717-08-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-2-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

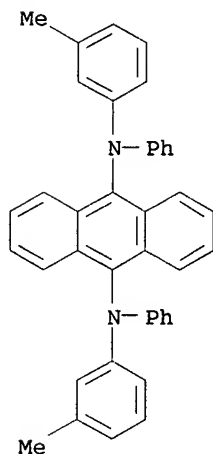


IT 189263-81-8P

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(diaminoanthracene derivs. as high-performance green host electroluminescent materials)

RN 189263-81-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(3-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



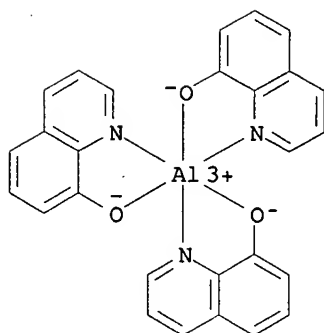
IT 2085-33-8, Alq3

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(electron-transporting layer; electroluminescent devices employing diaminoanthracene derivs. as high-performance green host electroluminescent materials and containing)

RN 2085-33-8 HCAPLUS

CN Aluminum, tris(8-quinolinolato-κN1,κO8)- (9CI) (CA INDEX NAME)





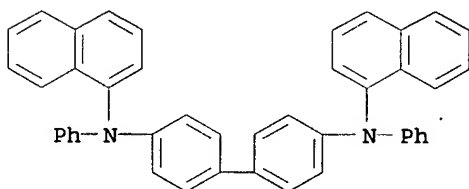
IT 123847-85-8, NPB

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(hole-transporting layer; **electroluminescent** devices employing diaminoanthracene derivs. as high-performance green host **electroluminescent** materials and containing)

RN 123847-85-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 25, 76

ST diaminoanthracene deriv green **electroluminescent** material device **luminescence** absorption synthesis; naphthylphenylamino **anthracene** NPA green **luminescence** synthesis **electroluminescence** device; tolylphenylamino **anthracene** TPA green **luminescence** synthesis absorption; diphenylamino **anthracene** PPA green **luminescence** synthesis **electroluminescence** device

IT LUMO (molecular orbital)

(HOMO gap; of diaminoanthracene derivs. as high-performance green host **electroluminescent** materials)

IT HOMO (molecular orbital)

(LUMO gap; of diaminoanthracene derivs. as high-performance green host **electroluminescent** materials)

IT **Luminescent** substances

(**electroluminescent**, green-emitting; diaminoanthracene derivs. as high-performance green host **electroluminescent** materials)

IT **Electroluminescent** devices

(green-emitting; diaminoanthracene derivs. as high-performance green host **electroluminescent** materials)

IT Electric current-potential relationship

(luminance-; of **electroluminescent** devices employing diaminoanthracene derivs. as high-performance green host **electroluminescent** materials)

- IT UV and visible spectra  
(of diaminoanthracene derivs. as high-performance green host electroluminescent materials)
- IT Luminescence, electroluminescence  
(of electroluminescent devices employing diaminoanthracene derivs. as high-performance green host electroluminescent materials)
- IT Luminescence  
(visible; of diaminoanthracene derivs. as high-performance green host electroluminescent materials)
- IT 7440-22-4, Silver, uses  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(cathode capping layer; electroluminescent devices employing diaminoanthracene derivs. as high-performance green host electroluminescent materials and containing)
- IT 137948-22-2  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
(cathode; electroluminescent devices employing diaminoanthracene derivs. as high-performance green host electroluminescent materials and containing)
- IT 177799-11-0P 177799-14-3P 473717-08-7P  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)  
(diaminoanthracene derivs. as high-performance green host electroluminescent materials)
- IT 189263-81-8P  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(diaminoanthracene derivs. as high-performance green host electroluminescent materials)
- IT 3375-31-3, Palladium diacetate  
RL: CAT (Catalyst use); USES (Uses)  
(diaminoanthracene derivs. as high-performance green host electroluminescent materials and their synthesis using)
- IT 95-47-6, o-Xylene, uses 865-48-5 13716-12-6, Tri-tert-butylphosphine  
RL: NUU (Other use, unclassified); USES (Uses)  
(diaminoanthracene derivs. as high-performance green host electroluminescent materials and their synthesis using)
- IT 90-30-2, N-Phenyl-1-naphthylamine 122-39-4, Diphenylamine, reactions 135-88-6, N-Phenyl-2-naphthylamine 523-27-3, 9,10-Dibromoanthracene 1205-64-7, 3-Methyl diphenylamine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(diaminoanthracene derivs. as high-performance green host electroluminescent materials and their synthesis using)
- IT 50926-11-9, Indium tin oxide 220901-77-9  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
(electroluminescent devices employing diaminoanthracene derivs. as high-performance green host electroluminescent materials and containing)
- IT 147-14-8, Copper phthalocyanine  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(electroluminescent devices employing diaminoanthracene derivs. as high-performance green host electroluminescent materials and containing)

IT 192198-85-9, TPBI  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)  
 (electron-transporting layer; **electroluminescent** devices employing diaminoanthracene derivs. as high-performance green host **electroluminescent** materials and containing)

IT 2085-33-8, Alq3  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (electron-transporting layer; **electroluminescent** devices employing diaminoanthracene derivs. as high-performance green host **electroluminescent** materials and containing)

IT 123847-85-8, NPB  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
 (hole-transporting layer; **electroluminescent** devices employing diaminoanthracene derivs. as high-performance green host **electroluminescent** materials and containing)

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L94 ANSWER 14 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2002:368916 HCAPLUS  
 DOCUMENT NUMBER: 136:393041  
 TITLE: Organic **electroluminescent** devices  
 INVENTOR(S): Toguchi, Satoru; Ishikawa, Hitoshi; Tada, Hiroshi; Oda, Atsushi  
 PATENT ASSIGNEE(S): Samsung Electronics Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 87 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002058156	A1	20020516	US 2001-985657	2001 1105
US 6746784	B2	20040608	<--	
JP 2002151263	A2	20020524	JP 2000-339603	2000 1107
JP 3548841	B2	20040728	<--	
JP 2002151264	A2	20020524	JP 2000-339604	2000 1107
JP 3548842	B2	20040728	<--	
JP 2002151265	A2	20020524	JP 2000-339605	2000 1107
JP 3548843	B2	20040728	<--	
PRIORITY APPLN. INFO.:			JP 2000-339603	A 2000 1107

JP 2000-339604 A  
2000  
1107

JP 2000-339605 A  
2000  
1107

OTHER SOURCE(S): MARPAT 136:393041

AB Organic **electroluminescent** devices comprising an anode; a cathode; and  $\geq 1$  organic thin film layers including a **light-emitting** layer sandwiched between said anode and said cathode ADIW  $\geq 1$  organic thin film layer contains a compound including an (un)substituted cyclohexylidenemethine group.

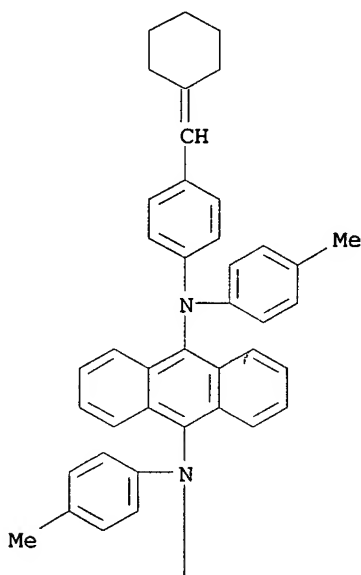
IT 426218-20-4P 426218-21-5P 426218-22-6P  
426218-47-5P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(organic **electroluminescent** devices employing cyclohexylidenemethine derivs.)

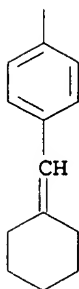
RN 426218-20-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis[4-(cyclohexylidenemethyl)phenyl]-  
N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

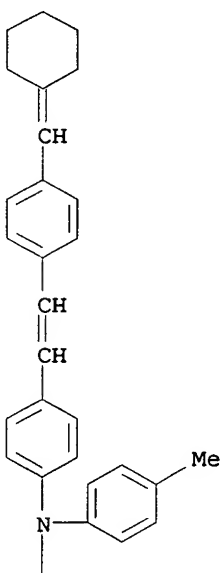



PAGE 2-A



RN 426218-21-5 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[4-[2-[4-(cyclohexylidenemethyl)phenyl]ethenyl]phenyl]-N,N'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)

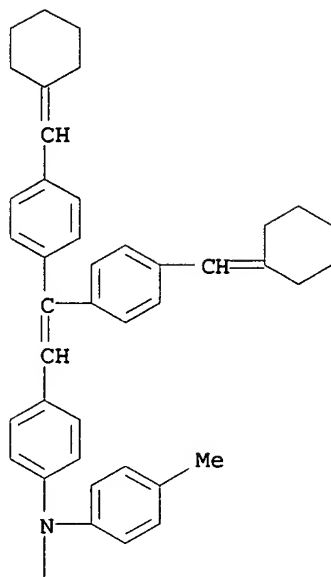
PAGE 1-A



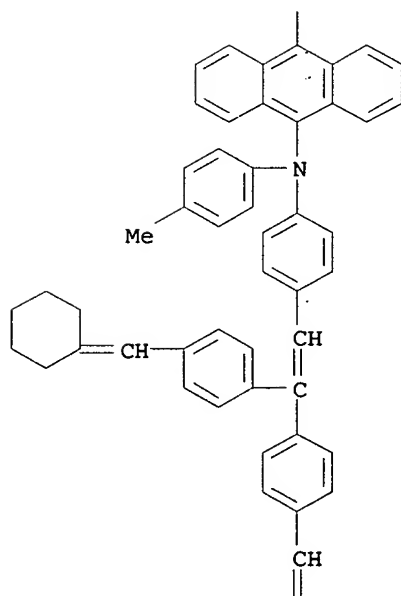
Cc1ccc(cc1)/N(c2ccc(cc2)/C=C/C=C/c3ccc(cc3)/C=C/)/c4ccc5ccccc45

571-272-2538

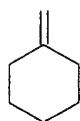
PAGE 1-A



PAGE 2-A

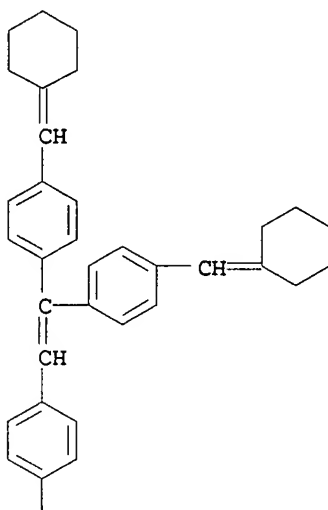


PAGE 3-A

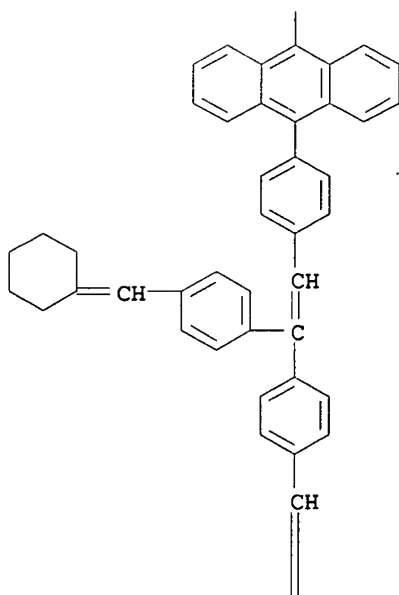


RN 426218-47-5 HCAPLUS  
CN Anthracene, 9,10-bis[4-[2,2-bis[4-(cyclohexylidenemethyl)phenyl]ethenyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

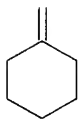


PAGE 2-A





PAGE 3-A



IC H05B033-12  
 INCL 428690000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 76  
 ST org **electroluminescent** device cyclohexylidenemethine deriv  
 IT **Electroluminescent** devices  
 (organic; organic **electroluminescent** devices employing cyclohexylidenemethine derivs.)  
 IT 2085-33-8, Alq3 15082-28-7, 2-(4-Biphenyl)-5-(4-t-butylphenyl)-1,3,4-oxadiazole 37271-44-6 50926-11-9, ITO 61843-06-9 65181-78-4, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-1,1'-biphenyl-4,4'-diamine 123847-85-8 150405-69-9 163226-12-8 181367-28-2 194214-31-8 194794-43-9 227939-49-3 426218-62-4 426218-63-5  
 RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent** devices employing cyclohexylidenemethine derivs.)  
 IT 7440-46-2, Cesium, uses  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (organic **electroluminescent** devices employing cyclohexylidenemethine derivs.)  
 IT 426218-12-4P 426218-13-5P 426218-14-6P 426218-15-7P 426218-16-8P 426218-17-9P 426218-18-0P 426218-19-1P 426218-20-4P 426218-21-5P 426218-22-6P 426218-23-7P 426218-24-8P 426218-25-9P 426218-26-0P 426218-27-1P 426218-28-2P 426218-30-6P 426218-31-7P 426218-32-8P 426218-33-9P 426218-34-0P 426218-35-1P 426218-36-2P 426218-37-3P 426218-38-4P 426218-40-8P 426218-41-9P 426218-42-0P 426218-44-2P 426218-46-4P 426218-47-5P 426218-49-7P 426218-50-0P 426218-52-2P 426218-53-3P 426218-54-4P 426218-55-5P 426218-56-6P 426218-59-9P 426218-60-2P 426218-61-3P 426252-99-5P 426253-00-1P 426253-01-2P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (organic **electroluminescent** devices employing cyclohexylidenemethine derivs.)  
 IT 62-53-3, Aniline, reactions 83-53-4, 1,4-Dibromonaphthalene 106-49-0, p-Toluidine, reactions 108-94-1, Cyclohexanone, reactions 122-52-1, Triethyl phosphite 128-08-5, N-Bromosuccinimide 523-27-3, 9,10-Dibromoanthracene 589-15-1, 4-Bromobenzyl bromide 589-17-3,  $\alpha$ -Chloro-4-bromotoluene 626-39-1, 1,3,5-Tribromobenzene 4316-58-9, Tris(4-bromophenyl)amine 19930-62-2 33861-11-9 56752-35-3, 3,9-Dibromoperylene 72393-15-8 97136-66-8 98327-87-8, 2,2'-Bis(diphenylphosphino)-1,1'-binaphthyl 121848-75-7, 10,10'-Dibromo-9,9'-bianthryl 128055-74-3, 2,2',7,7'-Tetrabromo-9,9'-spirobifluorene 227010-27-7 252646-79-0 426218-07-7 426218-09-9 426218-29-3 426218-39-5 426218-57-7 426218-58-8 426252-98-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (organic **electroluminescent** devices employing cyclohexylidenemethine derivs.)  
 IT 57438-72-9P 72436-33-0P 426218-05-5P 426218-06-6P

426218-08-8P 426218-10-2P 426218-11-3P 426218-43-1P  
426218-45-3P 426218-48-6P 426218-51-1P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(organic electroluminescent devices employing  
cyclohexylidenemethine derivs.)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L94 ANSWER 15 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:185253 HCAPLUS

DOCUMENT NUMBER: 136:224030

TITLE: Organic electroluminescent element

INVENTOR(S): Arakane, Takashi; Fukuoka, Kenichi; Hosokawa,  
Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 44 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
WO 2002020693	A1	20020314	WO 2001-JP7729	2001 0906

<--

W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1347031	A1	20030924	EP 2001-963466	2001 0906

<--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2003044643	A1	20030306	US 2002-111667	2002 0426

<--

US 6929871	B2	20050816		
US 2005244676	A1	20051103	US 2005-178456	2005 0712

PRIORITY APPLN. INFO.:	JP 2000-271707	A	2000 0907
	WO 2001-JP7729	W	2001 0906
	US 2002-111667	A1	2002 0426

AB The invention refers to an organic electroluminescent  
element comprising an anode layer, an organic  
luminescent layer, an inorg. compound layer (or a layer  
containing a reducible dopant), and a cathode layer, wherein the  
organic luminescent layer comprises an aromatic amine  
compound [Ar1Ar2N]pA, and/or an aromatic amine compound

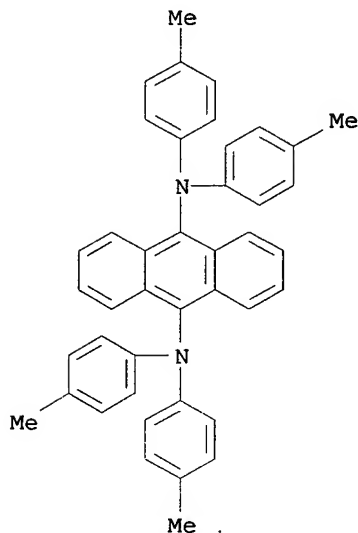
[Ar3Ar4N]qB[NAr5Ar6]r [A, B, Ar1-6 = C6-60 aromatic containing neither styryl nor alkenyl; and at least one of A, Ar1, Ar2 or one of B, Ar3-6 comprises a fused aromatic ring with three or more rings; p, q, r = 1 - 6].

IT 177799-16-5 247575-24-2

RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent element)

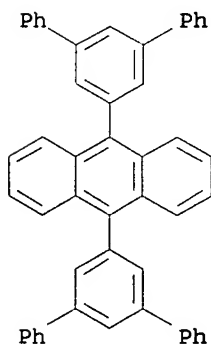
RN 177799-16-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
(CA INDEX NAME)



RN 247575-24-2 HCAPLUS

CN Anthracene, 9,10-bis([1,1':3',1''-terphenyl]-5'-yl)- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

ICS H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST electroluminescent device amine arom

IT Electroluminescent devices  
(organic electroluminescent element)

IT 7789-24-4, Lithium fluoride, uses 22441-13-0, Lithium mono(2,2,6,6-tetramethyl-3,5-heptanedionato) 177799-16-5

194296-06-5 227009-37-2 247575-24-2 249288-60-6

364765-18-4 402824-81-1 402824-82-2 402824-83-3

402824-84-4 402824-85-5 402824-86-6

RL: DEV (Device component use); USES (Uses)

(organic electroluminescent element)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L94 ANSWER 16 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:107847 HCAPLUS

DOCUMENT NUMBER: 136:175239

TITLE: Organic electroluminescent element  
and organic electroluminescent  
display

INVENTOR(S): Motomatsu, Toshihiko; Sakaguchi, Yoshikazu

PATENT ASSIGNEE(S): NEC Corp., Japan

SOURCE: U.S. Pat. Appl. Publ., 15 pp., Cont.-in-part  
of U.S. Ser. No. 788,883.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

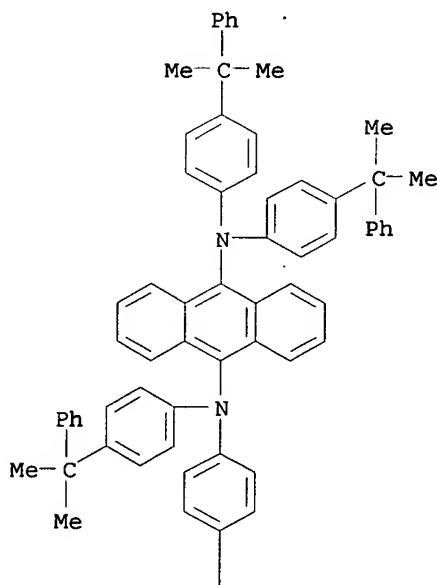
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002015860	A1	20020207	US 2001-932194	2001 0817
US 6689493	B2	20040210	<--	
JP 2001307885	A2	20011102	JP 2001-42102	2001 0219
JP 3688207	B2	20050824	<--	
US 2001028961	A1	20011011	US 2001-788883	2001 0220
EP 1235466	A2	20020828	EP 2001-119918	2001 0817
EP 1235466	A3	20050817	<--	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRIORITY APPLN. INFO.:			JP 2000-40925	A 2000 0218
			JP 2001-42102	A 2001 0219
			US 2001-788883	A2 2001 0220

OTHER SOURCE(S): MARPAT 136:175239  
GI

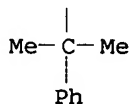
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT

- AB Organic electroluminescent elements comprising an anode and a cathode opposing to each other, and at least one luminescent layer sandwiched between them are described in which the luminescent layer comprises an aromatic amine derivative designated by the general formula I (R1-28 = independently selected H, halogen, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted aryl, and (un)substituted amino groups; Y1-4 = independently selected O, S, SO<sub>2</sub>, CO, CH<sub>2</sub>O, CH<sub>2</sub>OCH<sub>2</sub>, and (un)substituted alkylene groups; and two of R1-4 and/or two of R5-8 may be bonded to form a (un)substituted five-membered or six-membered ring) and a dibenzo-[[f,f']-4,4',7,7'-tetraphenyl]-diindeno[1,2,3-cd:1',2',3'-lm] **perylene** derivative described by the general formula II (X1-20 = independently selected H, halogen, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted aryl, and (un)substituted amino groups; and two of X1-20 may be bonded to form a (un)substituted five-membered or six-membered ring). The elements may also be provided with electron-injecting or electron-transporting layers based on metal complexes. Electroluminescent displays employing the elements are also described.
- IT 177799-15-4  
 RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent elements and displays using aromatic amine and **perylene** derivs.)
- RN 177799-15-4 HCAPLUS
- CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H05B033-12  
 INCL 428690000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 76  
 ST org **electroluminescent** element arom amine  
**perylene** deriv  
 IT **Electroluminescent** devices  
 (organic; organic **electroluminescent** elements and displays using aromatic amine and **perylene** derivs.)  
 IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 177799-15-4  
 188049-36-7 219319-02-5 219319-10-5 395644-78-7  
 395644-79-8  
 RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent** elements and displays using aromatic amine and **perylene** derivs.)  
 IT 175606-05-0  
 RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)  
 (organic **electroluminescent** elements and displays using aromatic amine and **perylene** derivs.)

L94 ANSWER 17 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2001:748262 HCAPLUS  
 DOCUMENT NUMBER: 135:296020  
 TITLE: Organic **electroluminescent** element  
 and organic **electroluminescent**  
 display  
 INVENTOR(S): Motomatsu, Toshihiko  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 12 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001028961	A1	20011011	US 2001-788883	2001 0220
US 2002015860	A1	20020207	US 2001-932194	2001 0817
US 6689493	B2	20040210		
US 2002164499	A1	20021107	US 2002-183909	2002 0627
PRIORITY APPLN. INFO.:			JP 2000-40925	A 2000 0218
			JP 2001-42102	A 2001 0219
			US 2001-788883	A2 2001 0220

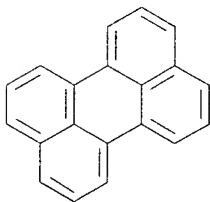
OTHER SOURCE(S): MARPAT 135:296020  
GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

AB Organic electroluminescent elements comprising an anode and a cathode sandwiching  $\geq 1$  luminescent layer, are described in which the luminescent layer includes an aromatic amine derivative described by the general formula I (R1-28 = independently selected H, halo, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted aryl and (un)substituted amino; Y1-4 = independently selected O, S, SO<sub>2</sub>, C=O, CH<sub>2</sub>O, CH<sub>2</sub>OCH<sub>2</sub> and (un)substituted alkylene groups; and two of R1-4 and/or two of R5-8 may be bonded to form a (un)substituted five-membered or six-membered ring) and a dibenzo-{{f,f'}}-4,4',7,7'-tetraphenyl}-diindeno[1,2,3-cd:1',2',3'-lm] perylene derivative described by the general formula II (X1-20 = independently selected H, halo, (un)substituted alkyl, (un)substituted alkoxy, (un)substituted aryl and (un)substituted amino groups; and two of X1-20 may be bonded to form a (un)substituted five-membered or six-membered ring).

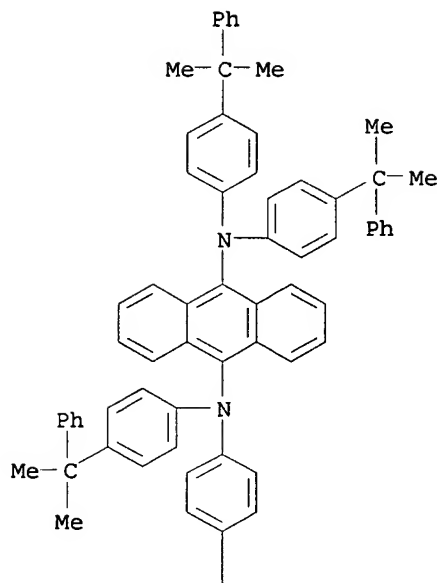
IT 198-55-0D, Perylene, derivs. 177799-15-4  
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent elements using aromatic amine and perylene derivs.)

RN 198-55-0 HCAPLUS  
CN Perylene (8CI, 9CI) (CA INDEX NAME)

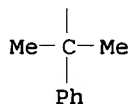


RN 177799-15-4 HCAPLUS  
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM B32B009-00  
ICS B32B019-00  
INCL 428690000  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76  
ST org **electroluminescent** element arom amine  
**perylene** deriv  
IT Phosphors  
(**electroluminescent**; organic **electroluminescent** elements using aromatic amine and **perylene** derivs.)  
IT **Electroluminescent** devices  
(organic **electroluminescent** elements using aromatic amine and **perylene** derivs.)  
IT 198-55-0D, **Perylene**, derivs. 2085-33-8,  
Tris(8-hydroxyquinolino)aluminum 177799-15-4  
188049-36-7  
RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** elements using aromatic amine and **perylene** derivs.)  
IT 187174-68-1  
RL: DEV (Device component use); MOA (Modifier or additive use);  
USES (Uses)  
(organic **electroluminescent** elements using aromatic amine and **perylene** derivs.)

L94 ANSWER 18 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2001:228988 HCAPLUS  
DOCUMENT NUMBER: 134:273305



TITLE: Organic electroluminescence and  
organic luminous medium  
INVENTOR(S): Hosokawa, Chishio; Higashi, Hisahiro; Fukuoka,  
Kenichi; Ikeda, Hidetsugu  
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
SOURCE: PCT Int. Appl., 41 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001021729	A1	20010329	WO 2000-JP6402	2000 0920

&lt;--

W: CN, IN, JP, KR  
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,  
MC, NL, PT, SE  
EP 1167488 A1 20020102 EP 2000-961101  
2000  
0920

&lt;--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
MC, PT, IE, FI  
TW 474113 B 20020121 TW 2000-89119391  
2000  
0920

&lt;--

US 6534199 B1 20030318 US 2000-665416  
2000  
0920

&lt;--

PRIORITY APPLN. INFO.: JP 1999-267460 A  
1999  
0921

WO 2000-JP6402 W  
2000  
0920

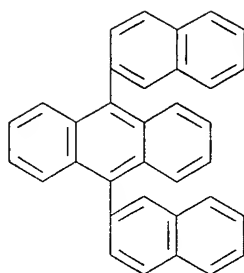
AB The invention refers to a organic electroluminescent device comprising a mono-, di- or tri- styryl amine, and at least one of the anthracene derivs., A1LA1 [A1,2 = (un)substituted mono Ph anthryl, or (un)substituted di-Ph anthryl; L = single bond or divalent chain] and A3AnA4 [An = (un)substituted anthracene; A3,4 = (un)substituted condensed aromatic ring, or (un)substituted C12+ chain uncondensed aryl ring].

IT 122648-99-1 172285-76-6 172285-79-9  
279672-57-0 331749-28-1 331749-31-6  
331749-32-7

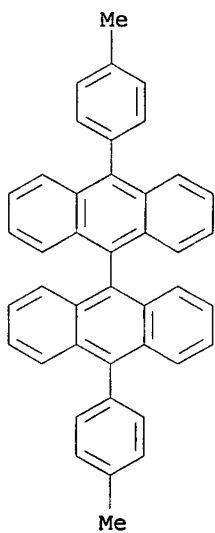
RL: DEV (Device component use); USES (Uses)  
(organic electroluminescence and organic  
luminous medium)

RN 122648-99-1 HCAPLUS

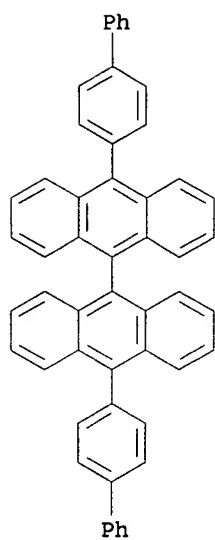
CN Anthracene, 9,10-di-2-naphthalenyl- (9CI) (CA INDEX NAME)



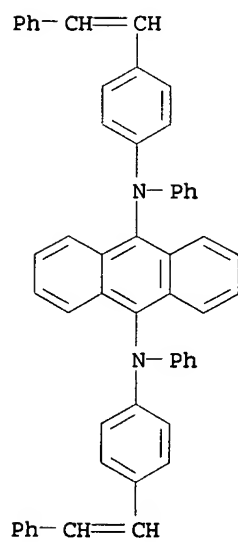
RN 172285-76-6 HCAPLUS  
CN 9,9'-Bianthracene, 10,10'-bis(4-methylphenyl)- (9CI) (CA INDEX NAME)



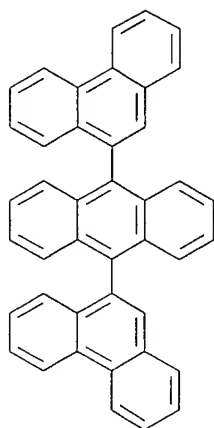
RN 172285-79-9 HCAPLUS  
CN 9,9'-Bianthracene, 10,10'-bis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



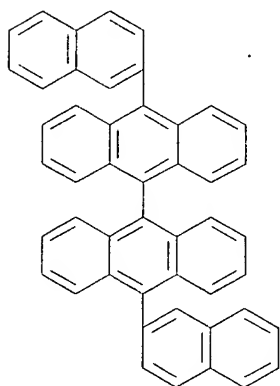
RN 279672-57-0 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-bis[4-(2-phenylethenyl)phenyl]- (9CI) (CA INDEX NAME)



RN 331749-28-1 HCAPLUS  
 CN Anthracene, 9,10-di-9-phenanthrenyl- (9CI) (CA INDEX NAME)

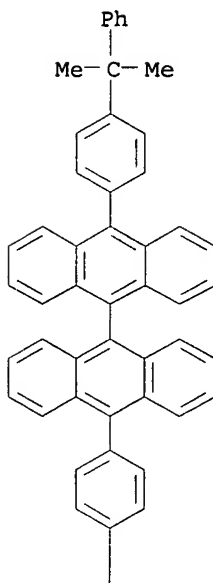


RN 331749-31-6 HCAPLUS  
CN 9,9'-Bianthracene, 10,10'-di-2-naphthalenyl- (9CI) (CA INDEX NAME)

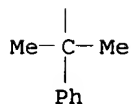


RN 331749-32-7 HCAPLUS  
CN 9,9'-Bianthracene, 10,10'-bis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C09K011-06  
ICS H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST **electroluminescent device anthracene**  
IT **Electroluminescent devices**  
(organic **electroluminescence** and organic **luminous medium**)  
IT 55035-42-2 55035-43-3 119564-21-5 122648-99-1  
167022-38-0 172285-76-6 172285-79-9  
205930-46-7 209980-47-2 219785-99-6 221453-32-3  
221453-38-9 229479-60-1 279672-57-0  
331749-28-1 331749-29-2 331749-30-5  
331749-31-6 331749-32-7 331749-33-8  
331749-34-9 331749-35-0  
RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescence** and organic **luminous medium**)  
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

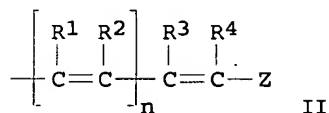
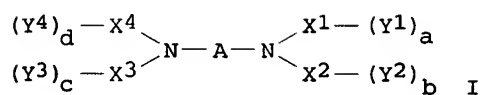
L94 ANSWER 19 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2000:457176 HCAPLUS  
DOCUMENT NUMBER: 133:81385  
TITLE: Organic **electroluminescent devices**  
INVENTOR(S): Hosokawa, Chishio; Funehashi, Masakazu;  
Kawamura, Hisayuki; Arai, Hiromasa; Koga,  
Hidetoshi; Ikeda, Hidetsugu

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 167 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000039247	A1	20000706	WO 1999-JP7390	1999 1228
<--				
W: CN, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 2001052868	A2	20010223	JP 1999-223056	1999 0805
<--				
JP 2001131541	A2	20010515	JP 1999-347848	1999 1207
<--				
EP 1061112	A1	20001220	EP 1999-961465	1999 1228
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
CN 1721499	A	20060118	CN 2005-10084528	1999 1228
EP 1666561	A1	20060607	EP 2006-110875	1999 1228
<--				
US 6743948	B1	20040601	US 2000-623057	2000 0825
<--				
US 2003072966	A1	20030417	US 2002-179179	2002 0626
<--				
US 6951693	B2	20051004		
US 2005038296	A1	20050217	US 2004-814121	2004 0401
PRIORITY APPLN. INFO.:				
			JP 1998-373921	A 1998 1228
			JP 1999-140103	A 1999 0520
			JP 1999-223056	A 1999 0805
			JP 1999-234652	A 1999 0820

JP 1999-347848	A	1999 1207
CN 1999-803419	A3	1999 1228
EP 1999-961465	A3	1999 1228
WO 1999-JP7390	W	1999 1228
US 2000-623057	A3	2000 0825

OTHER SOURCE(S): MARPAT 133:81385  
GI

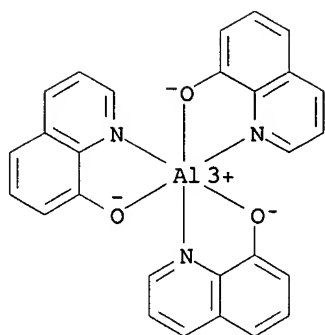


AB The devices having a high **luminescent** efficiency, a long life and a high heat resistance comprise I ( A = (substituted) C22-60 arylene; X1-4 = (substituted) C6-30 arylene; Y1-4 = II; a-d = 0-2; R1-4 = H, (substituted) alkyl, (substituted) aryl, cyano; R3 may be bonded to R4 to form a triple bond; Z = (substituted) aryl; n = 0, 1).

IT 2085-33-8, Tris(8-quinolinolato)aluminum  
177799-11-0 186412-15-7 279672-35-4  
279672-57-0  
RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** devices)

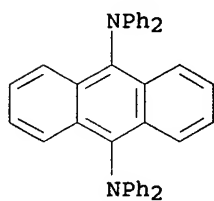
RN 2085-33-8 HCAPLUS

CN Aluminum, tris(8-quinolinolato-κN1,κO8)- (9CI) (CA  
INDEX NAME)



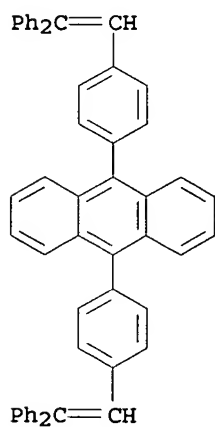
RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



RN 186412-15-7 HCAPLUS

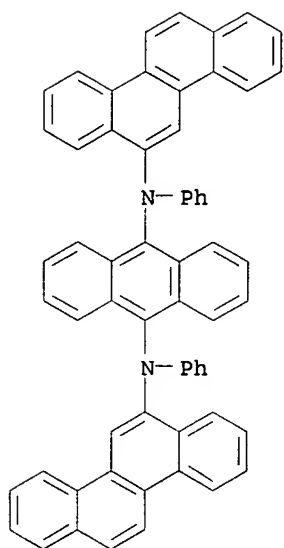
CN Anthracene, 9,10-bis[4-(2,2-diphenylethenyl)phenyl]- (9CI) (CA INDEX NAME)



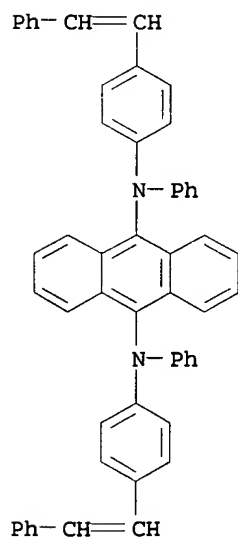
RN 279672-35-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-6-chrysenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)





RN 279672-57-0 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-bis[4-(2-phenylethenyl)phenyl]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06  
 ICS C07C211-54; C07C211-58; C07C209-10; B01J031-24; H05B033-14  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST **org** luminous long life  
**electroluminescent** device  
 IT Thermal resistance  
 (organic **electroluminescent** devices)  
 IT Polycarbonates, uses  
 RL: DEV (Device component use); USES (Uses)  
 (organic **electroluminescent** devices)  
 IT **Electroluminescent** devices  
 (zg43org. **electroluminescent** devices)  
 IT 2085-33-8, Tris(8-quinolinolato)aluminum 12789-79-6

50926-11-9, ITO 65181-78-4, TPD 142289-08-5,  
 4,4'-Bis(2,2-diphenylvinyl)biphenyl 177799-11-0  
 181367-28-2 186412-15-7 205930-46-7 221453-38-9  
 226086-76-6 239475-90-2 279671-24-8 279671-53-3  
 279671-54-4 279671-56-6 279671-57-7 279672-13-8  
 279672-14-9 279672-15-0 279672-16-1 279672-17-2  
 279672-18-3 279672-19-4 279672-20-7 279672-21-8  
 279672-22-9 279672-23-0 279672-24-1 279672-25-2  
 279672-27-4 279672-30-9 279672-32-1 279672-34-3  
 279672-35-4 279672-37-6 279672-39-8 279672-41-2  
 279672-42-3 279672-43-4 279672-44-5 279672-45-6  
 279672-46-7 279672-47-8 279672-48-9 279672-49-0  
 279672-50-3 279672-51-4 279672-52-5 279672-53-6  
 279672-54-7 279672-55-8 279672-56-9 279672-57-0  
 279672-58-1

RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent devices)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L94 ANSWER 20 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:363829 HCAPLUS

DOCUMENT NUMBER: 133:24764

TITLE: Organic electroluminescent display  
 devices with high luminance and efficient  
 light emission

INVENTOR(S): Onikubo, Shunichi; Tamano, Michiko

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2000150152	A2	20000530	JP 1998-324629	1998 1116

PRIORITY APPLN. INFO.: JP 1998-324629

1998  
1116

AB The device comprises a multicolored light-emitting layer and either or both of hole- and electron-injection layer(s) sandwiched in between a pair of electrodes. The light-emitting layer comprises multiple light-emitting regions having different colors and the hole- or the electro-injection layer is formed entirely on the light-emitting layer. Preferable compds. for each of the layers are given. Devices showing constant emission of each color are obtained.

IT 198-55-0, Perylene

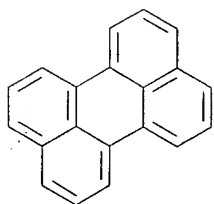
RL: DEV (Device component use); USES (Uses)

(blue light-emitting;

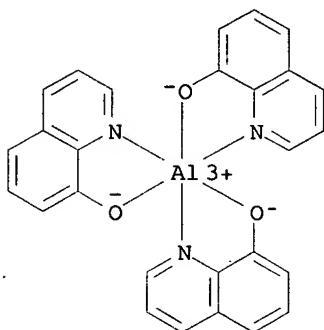
electroluminescent display devices with high luminance  
 and uniform emission of each colors)

RN 198-55-0 HCAPLUS

CN Perylene (8CI, 9CI) (CA INDEX NAME)

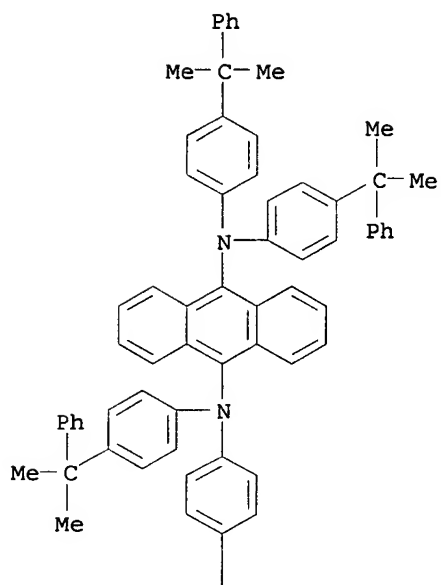


IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum  
 RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer and green light-emitting layer; electroluminescent display devices with high luminance and uniform emission of each colors)  
 RN 2085-33-8 HCAPLUS  
 CN Aluminum, tris(8-quinolinolato- $\kappa$ N1, $\kappa$ O8)- (9CI) (CA INDEX NAME)

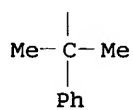


IT 177799-15-4 177799-16-5 189263-86-3  
 RL: DEV (Device component use); USES (Uses)  
 (green light-emitting; electroluminescent display devices with high luminance and uniform emission of each colors)  
 RN 177799-15-4 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

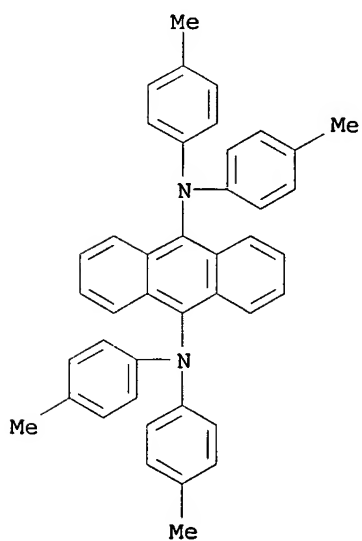
PAGE 1-A



PAGE 2-A

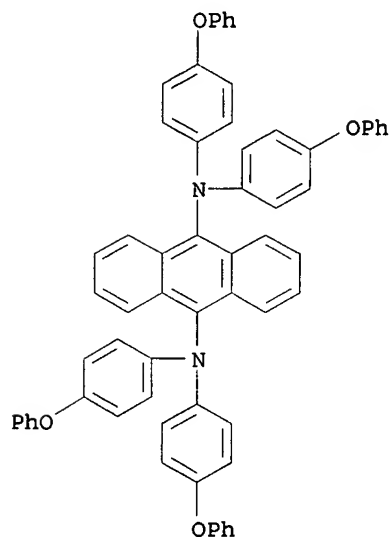


RN 177799-16-5 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
 (CA INDEX NAME)



RN 189263-86-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-phenoxyphenyl)- (9CI)  
(CA INDEX NAME)

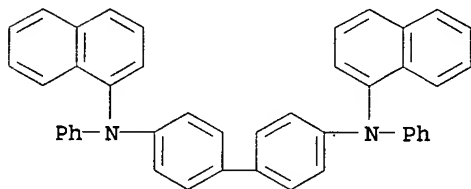


IT 123847-85-8

RL: DEV (Device component use); USES (Uses)  
(hole-injection layer; **electroluminescent** display  
devices with high luminance and uniform emission of each  
colors)

RN 123847-85-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



IC ICM H05B033-12

ICS G09F009-30; H05B033-14; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

ST **electroluminescent** display multicolored **light**  
**emitting** layer; hole injection layer

**electroluminescent** display device; electron injection  
layer **electroluminescent** display device

IT **Electroluminescent** devices

(**electroluminescent** display devices with high  
luminance and uniform emission of each colors)

IT 198-55-0, **Perylene** 4061-32-9 146162-54-1

158604-97-8 194296-06-5 213968-34-4 244280-90-8

271777-31-2 271777-32-3 271777-33-4

RL: DEV (Device component use); USES (Uses)

(blue **light-emitting**;

**electroluminescent** display devices with high luminance  
and uniform emission of each colors)

IT 58280-31-2

RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer and blue light-emitting layer; electroluminescent display devices with high luminance and uniform emission of each colors)

IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum  
 RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer and green light-emitting layer; electroluminescent display devices with high luminance and uniform emission of each colors)

IT 146162-49-4 150405-69-9 188049-36-7 188049-37-8  
 188049-39-0 188049-41-4 213620-77-0 221554-51-4  
 272116-82-2 272116-88-8 272122-21-1  
 RL: DEV (Device component use); USES (Uses)  
 (electron-injection layer; electroluminescent display devices with high luminance and uniform emission of each colors)

IT 19205-19-7, N,N'-Dimethylquinacridone 38215-36-0, Coumarin 6  
 113933-87-2 177799-15-4 177799-16-5  
 189263-86-3 219596-73-3 220720-18-3  
 RL: DEV (Device component use); USES (Uses)  
 (green light-emitting; electroluminescent display devices with high luminance and uniform emission of each colors)

IT 147-14-8, Copper phthalocyanine 574-93-6, Phthalocyanine  
 808-57-1, 2,3,6,7,10,11-Hexamethoxytriphenylene 32829-11-1  
 58473-78-2, 1,1-Bis[4-(di-p-tolylamino)phenyl]cyclohexane  
 65181-78-4 76185-65-4 123847-85-8 124729-98-2  
 151026-65-2 166444-98-0 208939-03-1 244281-07-0  
 272117-02-9 272117-03-0  
 RL: DEV (Device component use); USES (Uses)  
 (hole-injection layer; electroluminescent display devices with high luminance and uniform emission of each colors)

IT 517-51-1, Rubrene 51325-91-8 220071-88-5 227009-37-2  
 RL: DEV (Device component use); USES (Uses)  
 (orange light-emitting; electroluminescent display devices with high luminance and uniform emission of each colors)

IT 7385-67-3, Nile red 219638-70-7 252755-86-5 252755-96-7  
 271777-57-2 271777-58-3  
 RL: DEV (Device component use); USES (Uses)  
 (red light-emitting; electroluminescent display devices with high luminance and uniform emission of each colors)

L94 ANSWER 21 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:362825 HCAPLUS  
 DOCUMENT NUMBER: 133:24760  
 TITLE: Organic color electroluminescent display device  
 INVENTOR(S): Onikubo, Shunichi; Tamano, Michiko  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2000150161	A2	20000530	JP 1998-324628	1998

1116

PRIORITY APPLN. INFO.:

<--  
JP 1998-324628

1998

1116

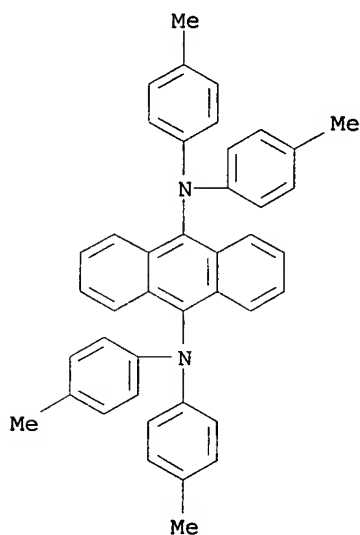
AB The display device is an assembly of organic electroluminescent devices containing an aromatic tertiary amine as a light-emitting material. The device shows high emission and long service life.

IT 177799-16-5

RL: DEV (Device component use); USES (Uses)  
(green-emitting layer; organic color electroluminescent display device containing tertiary amines)

RN 177799-16-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
(CA INDEX NAME)

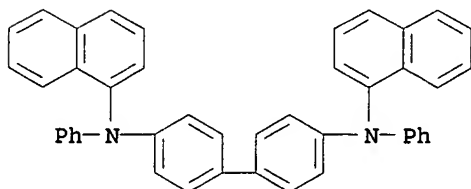


IT 123847-85-8

RL: DEV (Device component use); USES (Uses)  
(hole-injection layer; organic color electroluminescent display device containing tertiary amines)

RN 123847-85-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73

ST tertiary amine color electroluminescence display;  
 EL color display tertiary amine

IT Electroluminescent devices  
 (organic color electroluminescent display device containing  
 tertiary amines)

IT 144810-07-1 151026-65-2 175395-59-2 194296-03-2  
 213968-34-4 244280-90-8 254431-30-6 254432-63-8  
 271777-31-2 271777-32-3 271777-33-4 271777-34-5  
 RL: DEV (Device component use); USES (Uses)  
 (blue-emitting layer; organic color electroluminescent  
 display device containing tertiary amines)

IT 65181-78-4 144810-08-2 147850-55-3 177799-16-5  
 213968-38-8 219596-73-3 220720-18-3 271777-35-6  
 271777-56-1 271777-57-2  
 RL: DEV (Device component use); USES (Uses)  
 (green-emitting layer; organic color electroluminescent  
 display device containing tertiary amines)

IT 76185-65-4 123847-85-8 124729-98-2 185690-39-5  
 244281-07-0 244281-08-1  
 RL: DEV (Device component use); USES (Uses)  
 (hole-injection layer; organic color electroluminescent  
 display device containing tertiary amines)

IT 252756-13-1 271778-32-6  
 RL: DEV (Device component use); USES (Uses)  
 (orange-emitting layer; organic color electroluminescent  
 display device containing tertiary amines)

IT 220071-88-5  
 RL: DEV (Device component use); USES (Uses)  
 (organic color electroluminescent display device containing  
 tertiary amines)

IT 58473-78-2, 1,1-Bis[4-(di-p-tolylamino)phenyl]cyclohexane  
 219638-70-7 252755-86-5 252755-96-7 271777-58-3  
 RL: DEV (Device component use); USES (Uses)  
 (red-emitting layer; organic color electroluminescent  
 display device containing tertiary amines)

L94 ANSWER 22 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:85140 HCAPLUS

DOCUMENT NUMBER: 132:129838

TITLE: Organic electroluminescence device  
 and method of its manufacture

INVENTOR(S): Higashi, Hisahiro; Sakai, Toshio; Hosokawa,  
 Chishio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 67 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000005927	A1	20000203	WO 1999-JP3810	1999 0715
<--				
JP 2000100566	A2	20000407	JP 1999-65090	1999 0311
<--				
JP 3357857	B2	20021216		



JP 2002260860	A2	20020913	JP 2001-375155	1999 0311
			<--	
CA 2304585	AA	20000203	CA 1999-2304585	1999 0715
			<--	
EP 1033904	A1	20000906	EP 1999-929843	1999 0715
			<--	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
TW 432892	B	20010501	TW 1999-88112408	1999 0721
			<--	
US 6531234	B1	20030311	US 2000-508663	2000 0322
			<--	
PRIORITY APPLN. INFO.:			JP 1998-209748	A 1998 0724
			JP 1999-65090	A 1999 0311
			WO 1999-JP3810	W 1999 0715

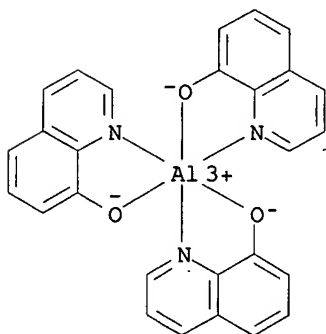
AB The invention relates to an organic **electroluminescent** device comprising a specific organic compound having **anthracene**, **naphthacene**, **pyrene**, and **perylene** skeletons, wherein the mass spectrum of the specific organic compound satisfies  $\Sigma(I_{sn})/I_m \leq 0.25$  for insuring the longevity of the device, wherein  $I_{sn}$  and  $I_m$  are the intensity of  $n$ th subpeak and that of the main peak, resp.

IT 2085-33-8, Al 8q 123847-85-8 172285-72-2  
177799-11-0

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescence** device)

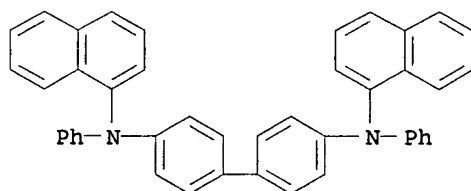
RN 2085-33-8 HCAPLUS

CN Aluminum, tris(8-quinolinolato- $\kappa$ N1, $\kappa$ O8)- (9CI) (CA  
INDEX NAME)



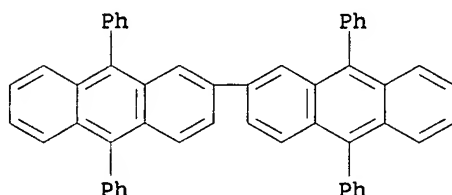
RN 123847-85-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



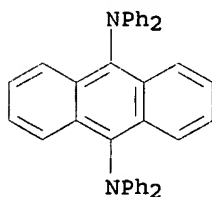
RN 172285-72-2 HCAPLUS

CN 2,2'-Bianthracene, 9,9',10,10'-tetraphenyl- (9CI) (CA INDEX NAME)



RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS H05B033-10

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST org electroluminescence device manuf mass spectroscopy

IT Mass spectra

(of compound used in organic electroluminescent device)

IT Electroluminescent devices

(organic electroluminescence device)

IT 2085-33-8, Al 8q 123847-85-8 124729-98-2

172285-72-2 177799-11-0 194295-98-2

213527-39-0

RL: DEV (Device component use); USES (Uses)

(organic electroluminescence device)

IT 144810-08-2

RL: DEV (Device component use); MOA (Modifier or additive use);

USES (Uses)

(organic electroluminescence device)

REFERENCE COUNT:

9

THERE ARE 9 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L94 ANSWER 23 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1999:638519 HCAPLUS  
 DOCUMENT NUMBER: 131:250227  
 TITLE: Organic **electroluminescence** device  
 INVENTOR(S): Toyama, Wataru; Hayano, Tomoaki; Sato,  
 Hiroyuki; Matsuura, Azuma  
 PATENT ASSIGNEE(S): Fujitsu Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11273864	A2	19991008	JP 1998-79453	1998 0326

PRIORITY APPLN. INFO.: <-- JP 1998-79453  
 1998  
 0326

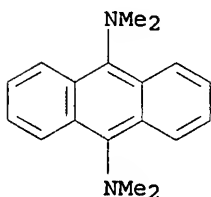
OTHER SOURCE(S): MARPAT 131:250227

AB The invention relates to an organic **electroluminescent** device, suited for use in making optical display devices with many variety of color tones, wherein the **electroluminescent** layer comprises  $\geq 1$  substance selected from specific **anthracene**, **bianthryl**, **perylene**, and **tetracene** derivs., for improving the **luminescent** efficiency of the device.

IT 118514-17-3  
 RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)  
 (organic **electroluminescence** device)

RN 118514-17-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetramethyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
 ICS C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74

ST org **electroluminescence** device **anthracene**  
 deriv **bianthryl** **perylene** **tetracene**

IT **Electroluminescent** devices  
 (organic **electroluminescence** device)

IT 1055-23-8, 9,9'-Bianthryl 1210-12-4, 9-Cyanoanthracene  
 1217-45-4, 9,10-Dicyanoanthracene 1467-03-4,  
 10,10'-Dicyano-9,9'-bianthryl 2395-97-3, 9,10-  
 Dimethoxyanthracene 10294-75-4, 10,10'-Dimethoxy-9,9'-bianthryl  
 23277-28-3, 3,4,9,10-Tetracyanoperylene 35426-74-5,

3-Perylenecarbonitrile 68818-86-0, 9,10-Diethoxyanthracene  
 103147-46-2, 3,9-Dicyanoperylene 103266-00-8,  
 10-Cyano-9,9'-bianthryl 118514-17-3 150016-45-8,  
 9-(Dimethylamino)anthracene 173471-00-6,  
 5-Naphthacenecarbonitrile 244299-32-9 244299-34-1,  
 5,12-Naphthacenedicarbonitrile 244299-36-3, 5,6,11,12-  
 Naphthacenetetracarbonitrile  
 RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)  
 (organic electroluminescence device)

L94 ANSWER 24 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:381746 HCAPLUS

DOCUMENT NUMBER: 131:124510

TITLE: Metal-Directed Assembly of Triple-Layered  
 Fluorescent Metallocyclophanes

AUTHOR(S): Holliday, Bradley J.; Farrell, Joshua R.;  
 Mirkin, Chad A.; Lam, Kin-Chung; Rheingold,  
 Arnold L.

CORPORATE SOURCE: Department of Chemistry, Northwestern  
 University, Evanston, IL, 60208, USA

SOURCE: Journal of the American Chemical Society (  
 1999), 121(26), 6316-6317  
 CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

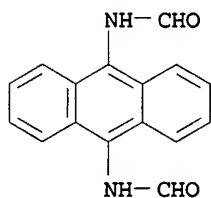
AB 9,10-Bis[2-(diphenylphosphino)ethoxy]anthracene (L)  
 reacts with  $[\text{RhCl}(\text{COT})_2]_2$  (COT = cyclooctene) to form the  
 "condensed" rhodium macrocycle  $[\text{Rh}_2\text{L}_2](\text{BF}_4)_2$  (1) in >99% yield.  
 Upon addition of acetonitrile to a methylene chloride solution of 1, the  
 weak Rh-O bonds of 1 are selectively broken resulting in the  
 quant. formation of open macrocycle  $[\text{Rh}_2\text{L}_2(\text{CD}_3\text{CN})_4](\text{BF}_4)_2$  (2)  
 which is accompanied by a 10-fold increase in the  
 fluorescence intensity of an emission band at 442 nm.  
 Addition of 1,4-phenylene- and 9,10-anthracenediisocyanides (X) to 2  
 yields "three-tiered" structures  $[\text{Rh}_2\text{L}_2(\text{CH}_3\text{CN})_2\text{X}](\text{BF}_4)_2$  (3a-b) and  
 $[\text{Rh}_2\text{L}_2(\text{CH}_3\text{CN})_2\text{X}_2](\text{BF}_4)_2$  (4a-b). The crystal structure of 3b was  
 determined and the fluorescence lifetimes of 2, 3a, and 3b  
 were measured.

IT 10303-96-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP  
 (Preparation); RACT (Reactant or reagent)  
 (reactant for preparation of 9,10-anthracenediisocyanide)

RN 10303-96-5 HCAPLUS

CN Formamide, N,N'-9,10-anthracenediylbis- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 73, 75

ST crystal structure rhodium phosphinoethoxyanthracene  
 anthracenediisocyanide acetonitrile; rhodium  
 phosphinoethoxyanthracene isonitrile prepn fluorescence  
 UV

IT Fluorescence

(of dirhodium bis(diphenylphosphino)ethoxyanthracene

diisocyanide acetonitrile dinuclear complexes)

IT 232922-58-6P  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(preparation and UV-visible and fluorescence spectra)

IT 232922-60-0P  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
(preparation, UV-visible and fluorescence spectra, and mol. structure)

IT 232922-56-4P  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)  
(preparation, UV-visible and fluorescence spectra, and reaction with isonitriles)

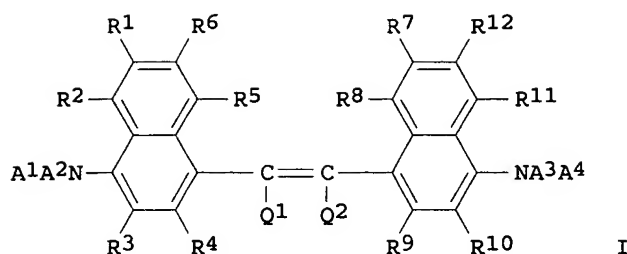
IT 10303-96-5P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(reactant for preparation of 9,10-anthracenediisocyanide)

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L94 ANSWER 25 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:111658 HCAPLUS  
DOCUMENT NUMBER: 130:202697  
TITLE: Organic electroluminescent device used as planar light source in optical displays  
INVENTOR(S): Okutsu, Akira; Tamano, Michiko; Onikubo, Shunichi; Enokida, Toshio  
PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11040359	A2	19990212	JP 1997-195294	1997 0722
---				
PRIORITY APPLN. INFO.:				1997 0722
OTHER SOURCE(S):				
GI				

MARPAT 130:202697



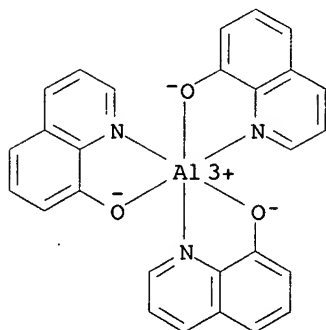
AB An organic electroluminescent device with high intensity and long operation life, comprises a light emitting layer containing a substance represented by I [A1-4 = alkyl, monocyclic, condensed polycyclic, etc.; Q1-2 = H, CN, alkyl, etc.; R1-12 = H, halo, CN, NO2, etc.] and an electron injection/transporting layer containing a substance represented by 1X2XLGe [X1-2 = hydroxyquinoline, and hydroxybenzoquinoline derivs.; L = halo, alkyl, monocyclic, etc.].

IT 2085-33-8, Al 8q 123847-85-8,  
4,4'-Bis{N-(1-naphthyl)-N-phenylamino}biphenyl 177799-11-0  
177799-15-4

RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent device used as planar  
light source in optical displays)

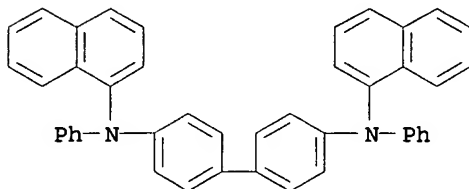
RN 2085-33-8 HCAPLUS

CN Aluminum, tris(8-quinolinolato-κN1,κO8)- (9CI) (CA  
INDEX NAME)



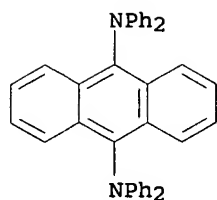
RN 123847-85-8 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



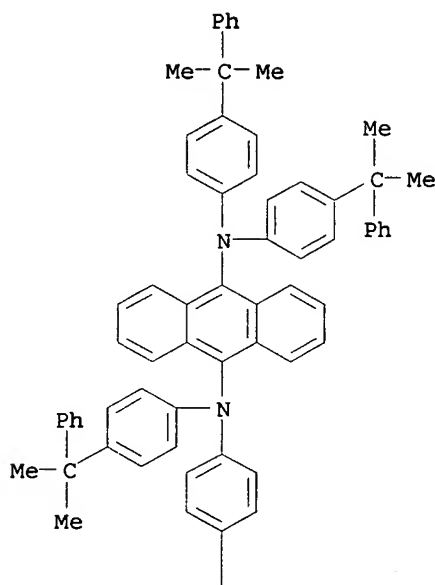
RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX  
NAME)

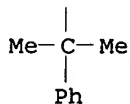


RN 177799-15-4 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST org electroluminescent device  
 IT Electroluminescent devices  
 (organic electroluminescent device used as planar light source in optical displays)  
 IT 2085-33-8, Al 8q 15082-28-7 62896-28-0 65181-78-4,  
 TPD 123847-85-8, 4,4'-Bis{N-(1-naphthyl)-N-phenylamino}biphenyl 124729-98-2, 4,4',4'''-Tris[N-(3-methylphenyl)-N-phenylamino]triphenylamine 151026-65-2,  
 N,N'-(4-Methylphenyl)-N,N'-(4-n-butylphenyl)-phenanthrene

-9,10-diamine 177799-11-0 177799-15-4  
 188049-36-7 194794-43-9 219638-64-9 220720-15-0  
 220720-16-1 220720-17-2 220720-18-3 220720-19-4  
 220720-20-7 220720-21-8 220720-22-9 220720-23-0  
 220720-24-1 220720-25-2 220720-26-3 220720-27-4  
 220720-28-5 220720-29-6 220720-31-0 220720-33-2  
 220720-34-3 220720-35-4 220720-36-5 220720-37-6  
 220720-38-7 220720-39-8

RL: DEV (Device component use); USES (Uses)  
 (organic electroluminescent device used as planar  
 light source in optical displays)

L94 ANSWER 26 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:693684 HCAPLUS

DOCUMENT NUMBER: 130:18786

TITLE: Organic electroluminescent device  
 material containing naphthacene derivative and  
 organic electroluminescent device  
 with it

INVENTOR(S): Okutsu, Satoshi; Tamano, Michiko; Onikubo,  
 Shunichi; Enokida, Toshio

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 10289786	A2	19981027	JP 1997-95406	1997 0414

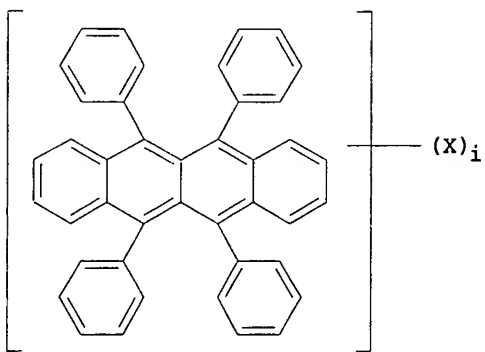
<--

PRIORITY APPLN. INFO.: JP 1997-95406

1997  
0414

OTHER SOURCE(S): MARPAT 130:18786

GI



AB The title material contains the derivative described by the general formula I (X = halo, cyano, alkyl, aryl, alkoxy, aryloxy, alkylthio, arylthio, cycloalkyl, heterocyclic, NH<sub>2</sub>; i = 1-28). Device are also described which have plural organic compound thin films, containing a light-emitting layer and a



hole injection layer, sandwiched by a pair of electrodes, in which one of the layers contains the material. The devices show high luminance, efficiency, and long life.

IT 177799-15-4 216066-64-7

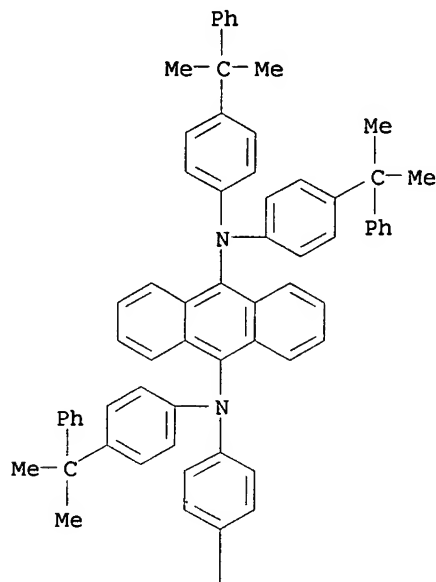
RL: DEV (Device component use); USES (Uses)

(organic electroluminescent device containing naphthacene compound)

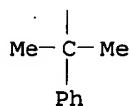
RN 177799-15-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

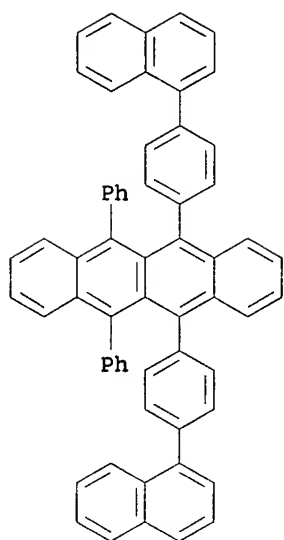


PAGE 2-A



RN 216066-64-7 HCAPLUS

CN Naphthacene, 5,12-bis[4-(1-naphthalenyl)phenyl]-6,11-diphenyl- (9CI) (CA INDEX NAME)



IC ICM H05B033-22  
ICS C09K011-06; H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76  
ST **electroluminescent** naphthacene deriv **light**  
**emitting** layer; hole injection layer naphthacene deriv  
IT Phosphors  
(**electroluminescent**; organic **electroluminescent** device containing naphthacene compound)  
IT **Electroluminescent** devices  
(organic **electroluminescent** device containing naphthacene compound)  
IT 2085-33-8 123847-85-8 146162-54-1 177799-15-4  
184024-25-7 194214-31-8 194794-43-9 213968-34-4  
216066-57-8 216066-58-9 216066-59-0 216066-60-3  
216066-62-5 216066-63-6 216066-64-7 216066-65-8  
216066-66-9 216066-67-0 216066-68-1 216066-69-2  
216066-70-5 216066-71-6 216066-72-7 216066-73-8  
216066-74-9 216066-75-0 216066-76-1 216066-77-2  
216066-78-3 216066-79-4 216066-80-7 216066-81-8  
216066-82-9 216066-83-0  
RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** device containing naphthacene compound)  
IT 120335-83-3P 216066-61-4P  
RL: DEV (Device component use); IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
(organic **electroluminescent** device containing naphthacene compound)  
IT 100-58-3, Phenylmagnesium bromide 1090-13-7,  
5,12-Naphthacenedione 1201-71-4 2417-95-0, p-Tolylolithium  
4294-57-9, p-Tolylmagnesium bromide 216066-84-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(organic **electroluminescent** device containing naphthacene compound)

L94 ANSWER 27 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1998:388451 HCAPLUS  
DOCUMENT NUMBER: 129:73815  
TITLE: Material for organoelectroluminescence device and use thereof

INVENTOR(S): Enokida, Toshio; Onikubo, Toshikazu; Okutsu,  
Satoshi; Tamano, Michiko  
PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan  
SOURCE: Eur. Pat. Appl., 56 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 847228	A2	19980610	EP 1997-309922	1997 1209
EP 847228	A3	19980902	<--	
EP 847228	B1	20030416		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10284255	A2	19981023	JP 1997-87802	1997 0407
JP 3580078	B2	20041020	<--	
JP 10294180	A2	19981104	JP 1997-102863	1997 0421
JP 11008072	A2	19990112	JP 1997-306786	1997 1110
JP 3572903	B2	20041006	<--	
US 6150042	A	20001121	US 1997-986788	1997 1208
EP 1191020	A2	20020327	EP 2001-126365	1997 1209
EP 1191020	A3	20030115	<--	
R: DE, FR, GB				
US 6245449	B1	20010612	US 1999-447959	1999 1129
JP 2004124101	A2	20040422	JP 2003-387522	2003 1118
JP 3747934	B2	20060222	<--	
PRIORITY APPLN. INFO.:			JP 1996-328069	A 1996 1209
			JP 1997-87802	A 1997 0407
			JP 1997-102863	A 1997 0421

JP 1997-102866	A	1997 0421
JP 1997-306786	A3	1997 1110
US 1997-986788	A3	1997 1208
EP 1997-309922	A3	1997 1209

OTHER SOURCE(S):        MARPAT 129:73815  
GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT  
\*

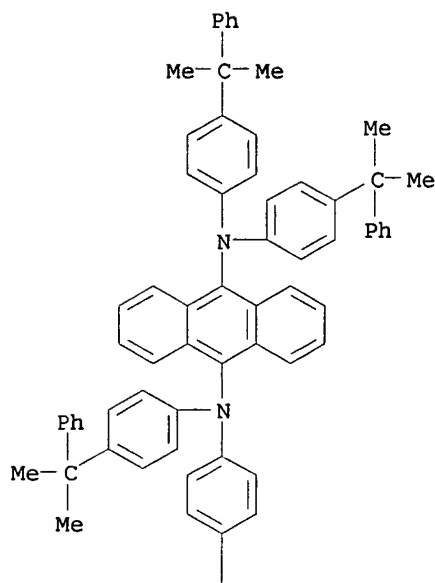
AB    Comps. suitable for use in **electroluminescent** devices  
      are described by the general formulas I, II, and III (R1 to R17  
      are organic residues, X1 to X18 are heteroatoms and A1 and A2 are  
      chemical rational organic residues composed of C, H and O atoms or of C,  
      H, O, and S atoms, having mol. weight of  $\leq 500$ ). The comps.  
      may be hole-transporting or hole-injecting comps.  
      **Electroluminescent** devices employing the comps. are also  
      described.

IT    177799-15-4  
      RL: DEV (Device component use); USES (Uses)  
         (triphenylene derivative-based **electroluminescent** and  
         hole-injecting materials for **electroluminescent**  
         device)

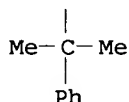
RN    177799-15-4    HCAPLUS

CN    9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-  
      phenylethyl)phenyl] - (9CI)    (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



- IC ICM H05B033-14  
ICS C09K011-06
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 76
- ST **electroluminescent** device org hole transport material;  
triphenylene deriv **electroluminescent** device material
- IT Phosphors  
(**electroluminescent**; triphenylene derivative-based **electroluminescent** and hole-injecting materials for **electroluminescent** device)
- IT Electric conductors  
(hole conductors; triphenylene derivative-based **electroluminescent** and hole-injecting materials for **electroluminescent** device)
- IT **Electroluminescent** devices  
(triphenylene derivative-based **electroluminescent** and hole-injecting materials for **electroluminescent** device)
- IT 217-59-4D, Triphenylene, amine derivs. 517-51-1, Rubrene  
808-57-1 1047-16-1, Quinacridone 2085-33-8,  
Tris(8-hydroxyquinolino)aluminum 28351-02-2,  
Diphenylanthracene 32829-11-1 58280-31-2 65181-78-4,  
N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-1,1'-biphenyl-4,4'-diamine  
69079-53-4 70351-87-0 82632-82-4 90430-83-4 99762-78-4  
100077-40-5 120419-02-5 123847-85-8, 4,4'-Bis(N-(1-naphthyl)-N-phenylamino)biphenyl 124729-98-2 134025-08-4 134025-09-5  
134025-10-8 134025-15-3 134656-41-0 141504-71-4  
146162-49-4 146162-63-2 148461-92-1 151026-65-2,

**N,N'-(4-Methylphenyl)-N,N'-(4-n-butylphenyl)-phenanthrene**

-9,10-diamine 162281-25-6 177799-15-4 185690-39-5  
 206876-04-2 208938-79-8 208938-80-1 208938-81-2  
 208938-82-3 208938-83-4 208938-84-5 208938-85-6  
 208938-86-7 208938-87-8 208938-88-9 208938-89-0  
 208938-90-3 208938-91-4 208938-92-5 208938-97-0  
 208938-99-2 208939-01-9 208939-02-0 208939-03-1  
 208939-04-2 208939-05-3 208939-06-4 208939-07-5  
 208939-08-6 208939-09-7 208939-10-0 208939-11-1  
 208939-12-2 208939-13-3 208939-14-4 208939-15-5  
 208939-16-6 208939-17-7 208939-18-8 208939-19-9  
 208939-20-2 208939-21-3 208939-22-4 208939-23-5  
 208939-24-6 208939-25-7 208939-26-8 208939-27-9  
 208939-28-0 208939-29-1 208939-30-4 208939-31-5  
 208939-32-6 208939-33-7 208939-34-8 208939-35-9  
 208939-36-0 208939-37-1 208939-38-2 208939-39-3  
 208939-40-6 208939-41-7 208939-42-8 208939-43-9  
 208939-44-0 208939-45-1 208939-46-2 208939-47-3  
 208939-48-4 208939-49-5 208939-50-8 208939-51-9  
 208939-52-0 208939-53-1 208939-54-2 208939-55-3  
 208939-56-4 208939-57-5 208939-58-6 208939-59-7  
 208939-61-1 208939-63-3 208939-64-4 208939-65-5  
 208939-66-6

RL: DEV (Device component use); USES (Uses)

(triphenylene derivative-based electroluminescent and  
 hole-injecting materials for electroluminescent  
 device)

L94 ANSWER 28 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:678708 HCAPLUS

DOCUMENT NUMBER: 128:17237

TITLE: Organic electroluminescent device  
 elements

INVENTOR(S): Enokida, Toshio; Tamano, Michiko

PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 33 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

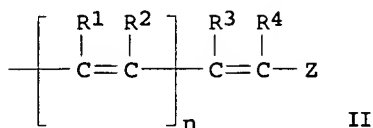
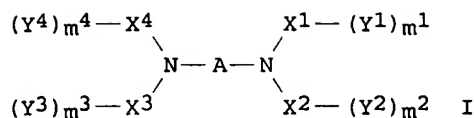
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 09268284	A2	19971014	JP 1996-78501	1996 0401
			<--	
JP 3564859	B2	20040915	JP 1996-78501	1996 0401

OTHER SOURCE(S): MARPAT 128:17237

GI



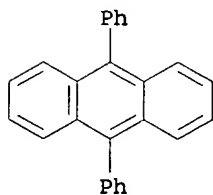
AB The elements comprise the phosphors I containing II; I [A, X1-4 = C2-20 arylene; m1, m2, m3, m4 = 0-2; Y1-4 = II] II [R1-4 = H, (un)substituted alkyl, (un)substituted aryl, CN; Z = (un)substituted aryl; n = 0, 1]; a tertiary amine derivative (B1,2N)G(NB3,4) formed between the phosphor and the anode [B1-4 = (un)substituted C6-20 aryl; G = (un)substituted arylene]; and a metal complex Q1,2GaL formed between the phosphor and the cathode [Q1,2 = (un)substituted hydrobenzoquinoline derivative; L = halo, (un)substituted (cyclo)alkyl, aryl cong. optional (un)substituted N, OR (R = L)].

IT 1499-10-1 198903-39-8 198903-40-1  
198903-41-2 198903-42-3 198903-43-4  
198903-46-7 198903-57-0 198903-59-2  
198903-60-5

RL: DEV (Device component use); USES (Uses)  
(organic **electroluminescent** device elements)

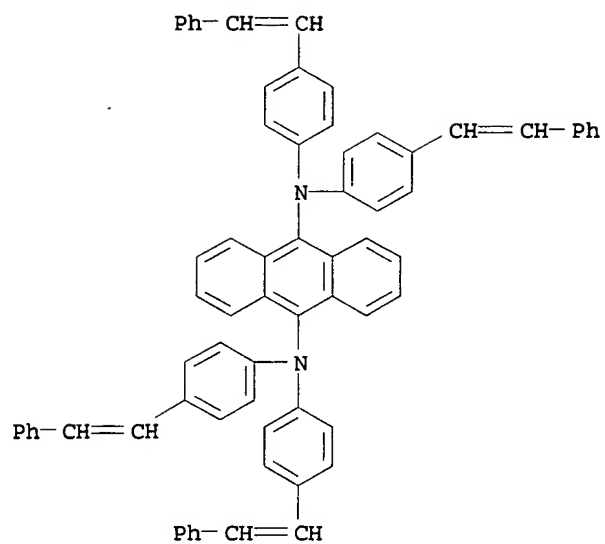
RN 1499-10-1 HCAPLUS

CN Anthracene, 9,10-diphenyl- (6CI, 8CI, 9CI) (CA INDEX NAME)



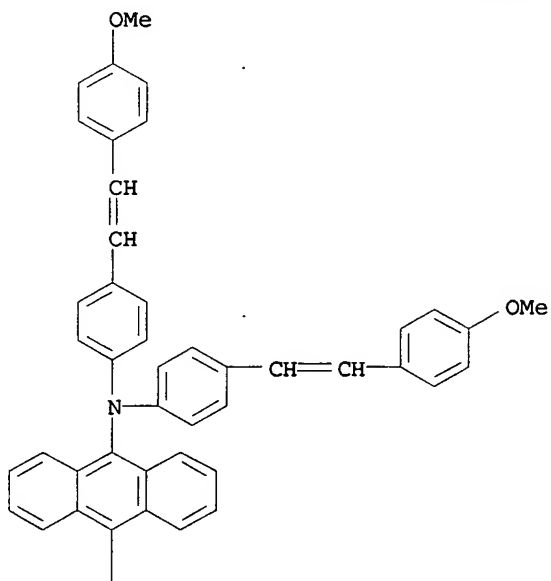
RN 198903-39-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(2-phenylethenyl)phenyl] - (9CI) (CA INDEX NAME)



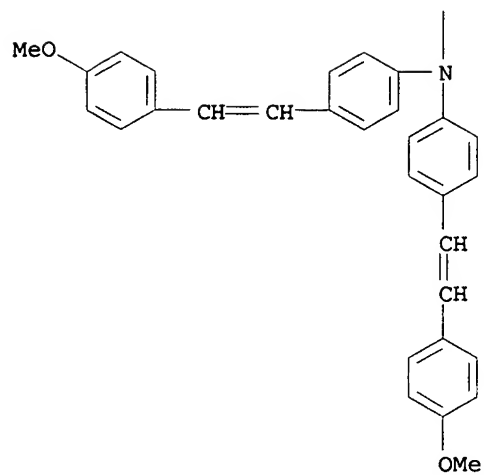
RN 198903-40-1 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-[2-(4-methoxyphenyl)ethenyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



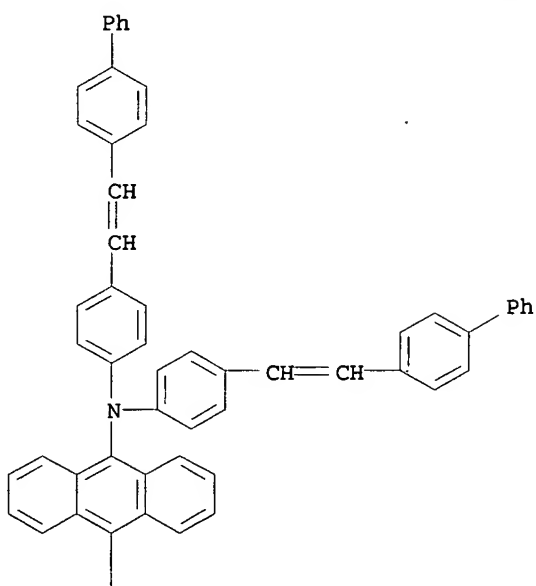


PAGE 2-A

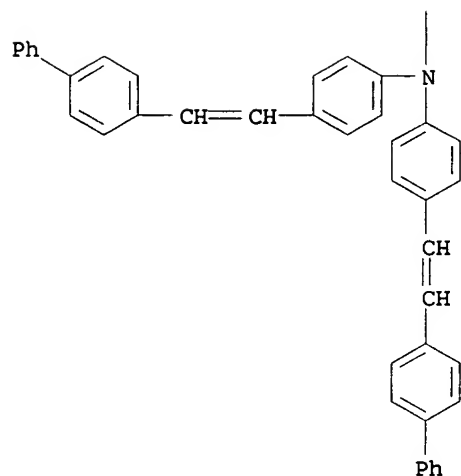


RN 198903-41-2 HCAPLUS  
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(2-[1,1'-biphenyl]-4-ylethenyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

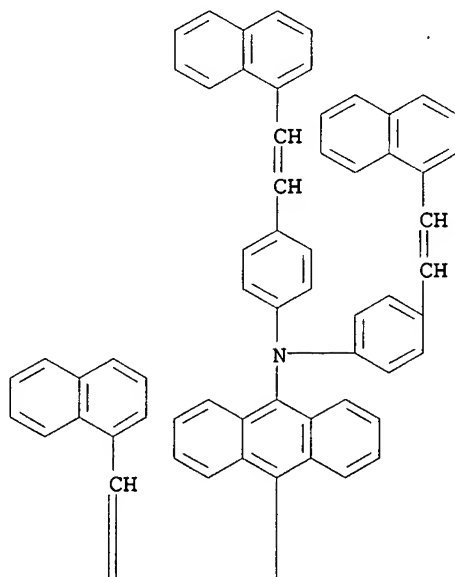


PAGE 2-A

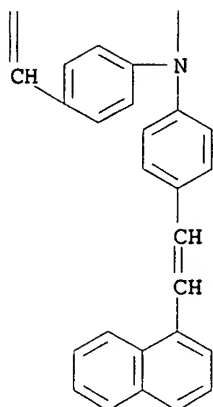


RN 198903-42-3 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-[2-(1-naphthalenyl)ethenyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

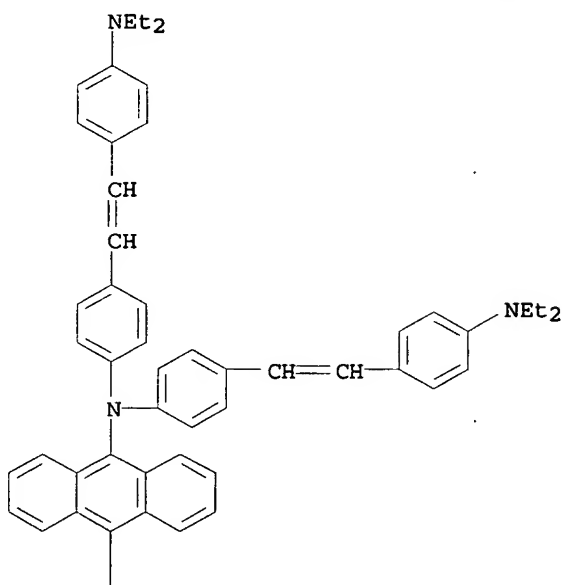


PAGE 2-A

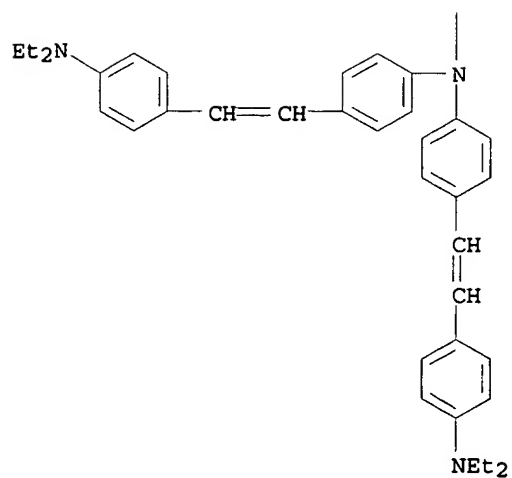


RN 198903-43-4 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-[2-[4-(diethylamino)phenyl]ethenyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

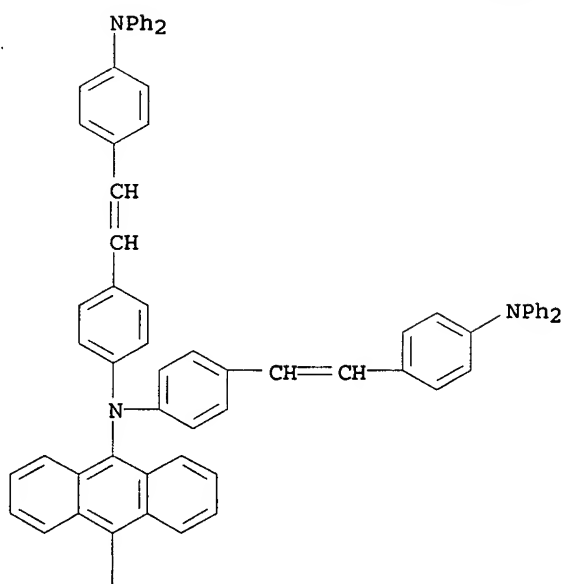


PAGE 2-A

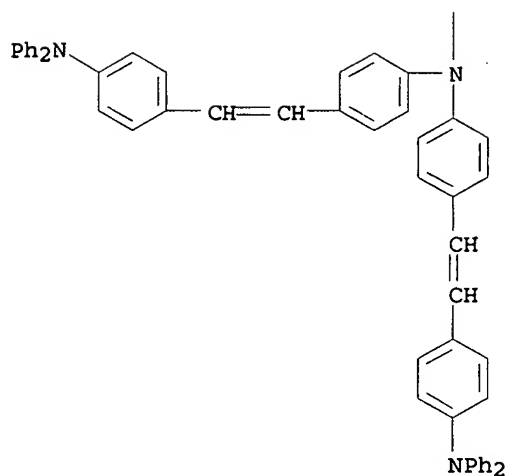


RN 198903-46-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-[2-[4-(diphenylamino)phenyl]ethenyl]phenyl]- (9CI) (CA INDEX NAME)

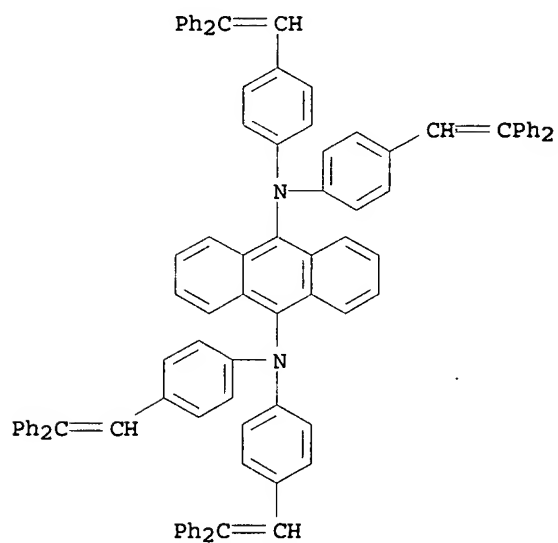
PAGE 1-A



PAGE 2-A

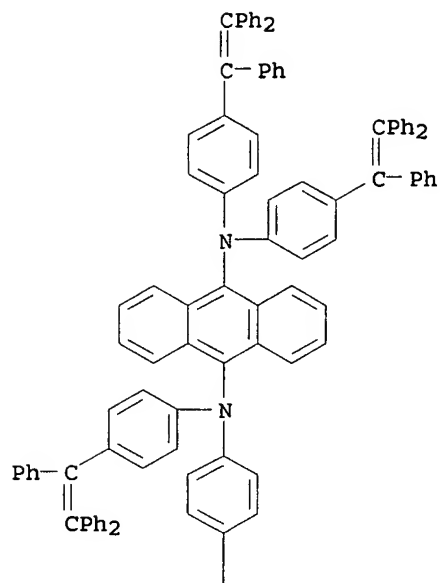


RN 198903-57-0 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(2,2-diphenylethenyl)phenyl]- (9CI) (CA INDEX NAME)

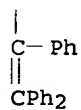


RN 198903-59-2 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(triphenylethenyl)phenyl]- (9CI) (CA INDEX NAME)

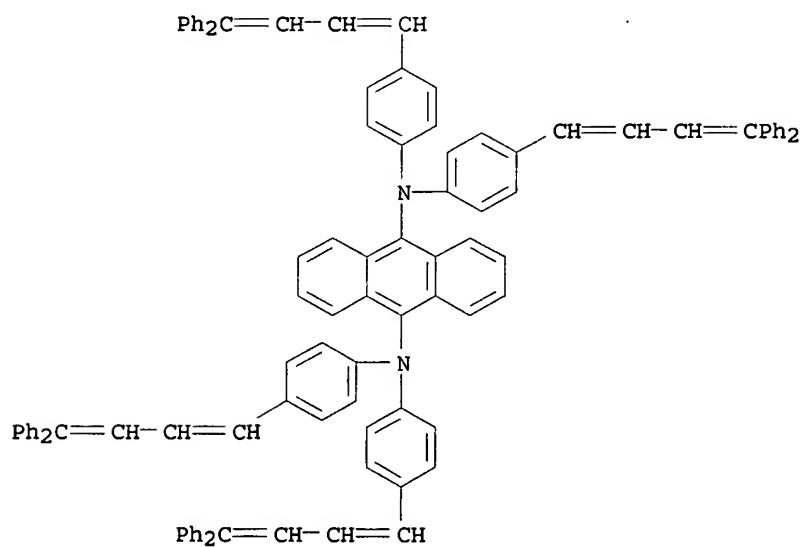
PAGE 1-A



PAGE 2-A



RN 198903-60-5 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(4,4-diphenyl-1,3-butadienyl)phenyl]- (9CI) (CA INDEX NAME)



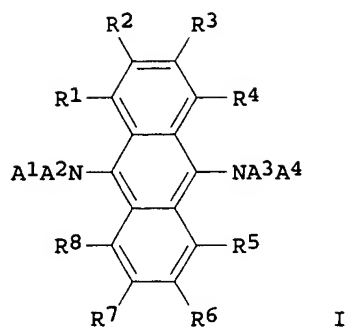
IC ICM C09K011-06

ICS H05B033-14  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 ST electroluminescent org phosphor  
 IT Phosphors  
     (electroluminescent; organic electroluminescent device elements)  
 IT Electroluminescent devices  
     (organic electroluminescent device elements)  
 IT Metallophthalocyanines  
     Polycarbonates, uses  
     RL: DEV (Device component use); USES (Uses)  
     (organic electroluminescent device elements)  
 IT 517-51-1 905-62-4 980-26-7 1047-16-1 1499-10-1  
     2085-33-8 7520-01-6 13978-85-3 14642-34-3 15082-28-7  
     38215-36-0 51325-91-8 58361-82-3 58473-78-2 61843-06-9  
     65181-78-4 73276-70-7 99762-78-4 123847-85-8 139255-17-7  
     143010-15-5 146162-54-1 146162-63-2 150405-69-9  
     151026-65-2 164259-44-3 166444-98-0 185505-35-5  
     186965-89-9 188049-36-7 188049-37-8 188049-39-0  
     188049-41-4 189263-95-4 198903-35-4 198903-36-5  
     198903-37-6 198903-38-7 198903-39-8  
     198903-40-1 198903-41-2 198903-42-3  
     198903-43-4 198903-44-5 198903-45-6  
     198903-46-7 198903-47-8 198903-48-9 198903-49-0  
     198903-50-3 198903-51-4 198903-52-5 198903-53-6  
     198903-54-7 198903-55-8 198903-56-9 198903-57-0  
     198903-58-1 198903-59-2 198903-60-5  
     198903-61-6 198903-62-7 198903-63-8 198903-64-9  
     RL: DEV (Device component use); USES (Uses)  
     (organic electroluminescent device elements)

L94 ANSWER 29 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1997:543038 HCAPLUS  
 DOCUMENT NUMBER: 127:235680  
 TITLE: Anthracene-type fluorescent  
         colorants for plastic moldings, coatings, and inks  
 INVENTOR(S): Tamano, Michiko; Enokida, Toshio  
 PATENT ASSIGNEE(S): Toyo Ink Mfg. Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.  
         CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 09208845	A2	19970812	JP 1996-18496	1996 0205
			<--	
JP 3740729	B2	20060201		
PRIORITY APPLN. INFO.:			JP 1996-18496	1996 0205

OTHER SOURCE(S): MARPAT 127:235680  
 GI



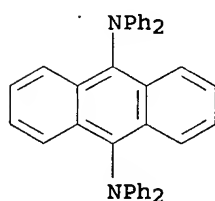
AB Title colorants I [A1-A4 = (substituted) C6-16 aryl; R1-R8 = H, halo, (substituted) alkyl, (substituted) alkoxy, (substituted) aryl, (substituted) amino], which are (1) dispersed in plastic moldings or (2) contained in binders of coatings or inks, show improved light, heat, and solvent resistance. Thus, 10 parts anthraquinone and 35 parts diphenylamine were reacted in PhH in the presence of pyridine and  $\text{TiCl}_4$  at room temperature for 20 h to give title colorant, 30 parts of which was mixed with 30 parts Sumikathene G 808 (polyethylene) and 40 parts Sanwax 131P (polyethylene wax) to give a master batch. Then, 100 parts Hizex 2208 (high-d. polyethylene) was mixed with 4 parts of the master batch and extrusion-molded to give a test piece showing no discoloration after 100-h exposure to sunshine weather meter.

IT 177799-11-0P 177799-12-1P 177799-13-2P  
177799-15-4P 177799-16-5P

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(colorants; anthracene-type fluorescent colorants for plastic moldings, coatings, and inks with improved weatherability)

RN 177799-11-0 HCAPLUS

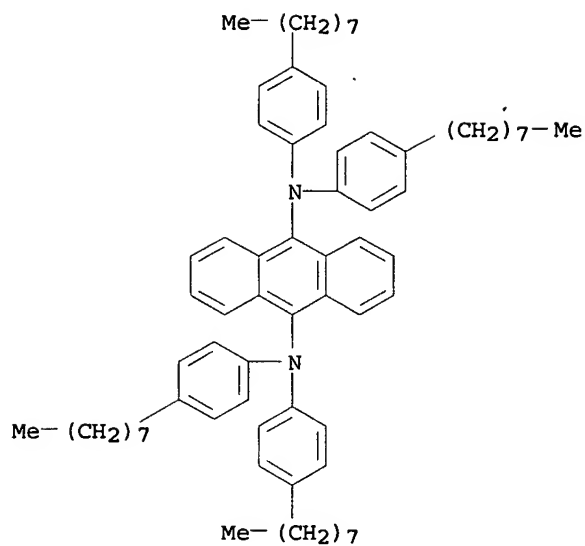
CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



RN 177799-12-1 HCAPLUS

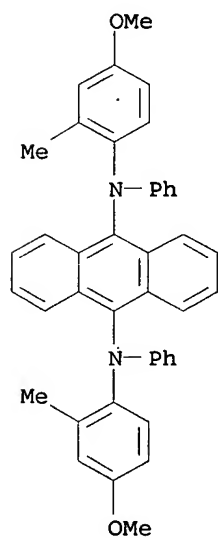
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-octylphenyl)- (9CI)  
(CA INDEX NAME)





RN 177799-13-2 HCAPLUS

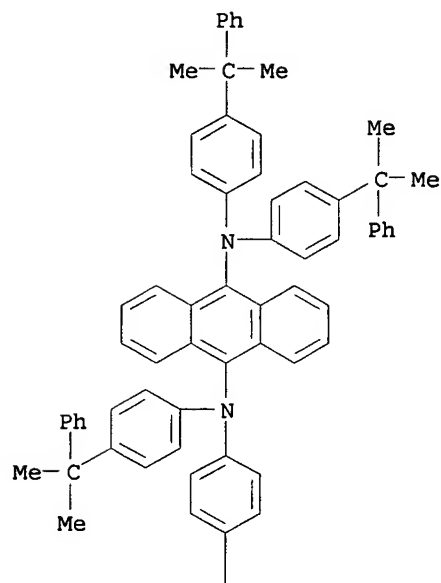
CN 9,10-Anthracenediamine, N,N'-bis(4-methoxy-2-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



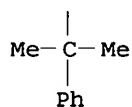
RN 177799-15-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

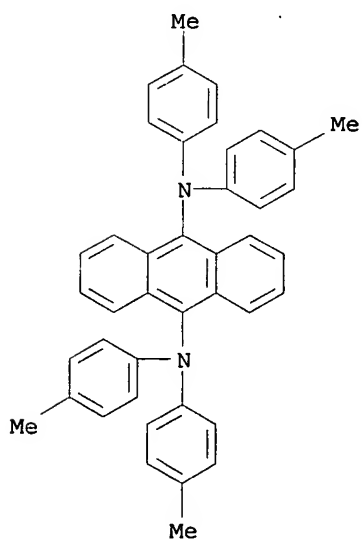
PAGE 1-A



PAGE 2-A



RN 177799-16-5 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
 (CA INDEX NAME)



IC ICM C09B057-00

ICS C08K005-16; C08L101-00; C09D005-22; C09D011-00

CC 41-10 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)  
Section cross-reference(s): 37, 42

ST **anthracene fluorescent** colorant light resistance; heat solvent resistance **fluorescent** colorant; plastic molding **fluorescent** colorant; coating **fluorescent** colorant; ink **fluorescent** colorant; anthraquinone diphenylamine adduct **fluorescent** colorant; polyethylene molding **fluorescent** colorant weatherability

IT Aromatic oils (hydrocarbons)  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PREP (Preparation); USES (Uses)  
(Shellsol AB, matrix; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT **Fluorescent dyes**  
Heat-resistant materials  
Light-resistant materials  
(**anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT Inks  
(gravure; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT Coating materials  
Coating materials  
(light-resistant; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT Rosin  
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)  
(phenolic resins, ink varnishes; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT Alkyd resins  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); PREP (Preparation); USES (Uses)  
(polymers with melamine resins; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT Inks  
(printing; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT Aminoplasts  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); PREP (Preparation); USES (Uses)  
(reaction products with alkyd resins; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT 9002-88-4, Polyethylene  
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)  
(Hizex 2208; **anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved weatherability)

IT 79-10-7DP, Acrylic acid, polymers with styrene and other monomers  
100-42-5DP, Styrene, polymers with acrylic acid and other monomers  
9003-08-1DP, Formaldehyde-melamine copolymer, reaction products with alkyd resins 9017-37-2P, Divinylbenzene-methyl methacrylate copolymer  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); PREP (Preparation); USES (Uses)  
(**anthracene-type fluorescent** colorants for plastic moldings, coatings, and inks with improved

weatherability)  
 IT 9002-86-2, PVC 9003-56-9, Kralastic MH  
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)  
 (anthracene-type fluorescent colorants for  
 plastic moldings, coatings, and inks with improved  
 weatherability)  
 IT 177799-11-0P 177799-12-1P 177799-13-2P  
 177799-15-4P 177799-16-5P  
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical  
 or engineered material use); PREP (Preparation); USES (Uses)  
 (colorants; anthracene-type fluorescent  
 colorants for plastic moldings, coatings, and inks with  
 improved weatherability)  
 IT 84-65-1, Anthraquinone 90-30-2, 1-Naphthyl(phenyl)amine  
 101-67-7, Bis(p-octylphenyl)amine 122-39-4, Diphenylamine,  
 reactions 523-27-3, 9,10-Dibromoanthracene 620-93-9  
 10081-67-1 41317-15-1 113705-11-6, 9,10-Diiodoanthracene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (light-resistant anthracene-type fluorescent  
 colorants from)

L94 ANSWER 30 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:334774 HCAPLUS

DOCUMENT NUMBER: 126:310317

TITLE: Light-emitting material  
 for organic electroluminescence  
 device, and organic  
 electroluminescence device for which  
 the light-emitting  
 material is adapted

INVENTOR(S): Enokida, Toshio; Tamano, Michiko; Okutsu,  
 Satoshi

PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 46 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

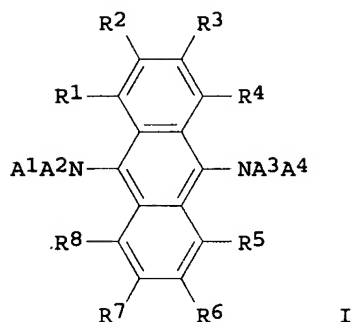
FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 765106	A2	19970326	EP 1996-305586	1996 0730
EP 765106	A3	19970813	<--	
EP 765106	B1	20021127		
R: DE, FR, GB				
EP 1146034	A1	20011017	EP 2001-113795	1996 0730
R: DE, FR, GB			<--	
US 5759444	A	19980602	US 1996-688879	1996 0731
KR 204220	B1	19990615	KR 1996-42007	1996 0924
US 6251531	B1	20010626	US 1998-30791	1998 0226

PRIORITY APPLN. INFO.: <--  
 JP 1995-245607 A 1995  
 0925  
 JP 1996-12430 A 1996  
 0129  
 EP 1996-305586 A3 1996  
 0730  
 US 1996-688879 A3 1996  
 0731

OTHER SOURCE(S): MARPAT 126:310317  
 GI

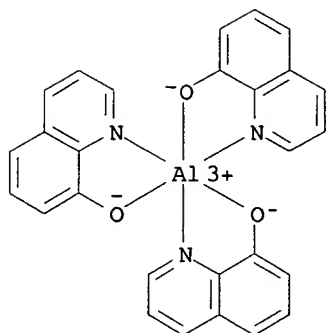


AB The title **light-emitting** compds. are described by the general formula I (A1-A4 are individually selected C6-16 substituted or unsubstituted aryl groups; and each of R1-8 is independently a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group or a substituted or unsubstituted amino group, provided that adjacent substituents may form an aryl ring). Use of the compds. as **light-emitting** materials in organic **electroluminescent** devices, and organic **electroluminescent** devices containing them, are also described.

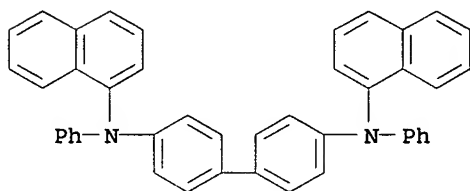
IT 2085-33-8 123847-85-8  
 RL: DEV (Device component use); USES (Uses)  
 (anthracenediamine derivative-based **light-emitting** materials for organic **electroluminescent** devices and the devices)

RN 2085-33-8 HCAPLUS

CN Aluminum, tris(8-quinolinolato-κN1,κO8)- (9CI) (CA  
 INDEX NAME)



RN 123847-85-8 HCAPLUS

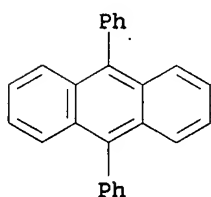
CN [1,1'-Biphenyl]-4,4'-diamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)

IT 1499-10-1

RL: DEV (Device component use); MOA (Modifier or additive use);  
USES (Uses)(anthracenediamine derivative-based light-  
**emitting** materials for organic **electroluminescent**  
devices and the devices)

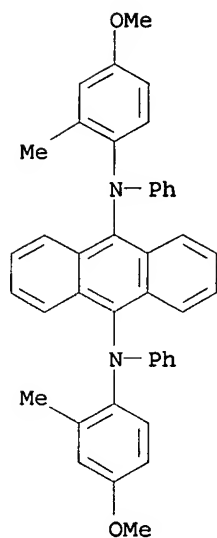
RN 1499-10-1 HCAPLUS

CN Anthracene, 9,10-diphenyl- (6CI, 8CI, 9CI) (CA INDEX NAME)

IT 177799-13-2 177799-16-5 189263-81-8  
189263-82-9 189263-83-0 189263-84-1  
189263-85-2 189263-86-3 189263-87-4  
189263-88-5 189263-89-6 189263-90-9  
189263-91-0 189263-92-1 189263-93-2  
189263-94-3 189263-96-5 189263-97-6  
189263-98-7 189263-99-8 189264-00-4  
189264-01-5RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(anthracenediamine derivative-based light-  
**emitting** materials for organic **electroluminescent**  
devices and the devices)

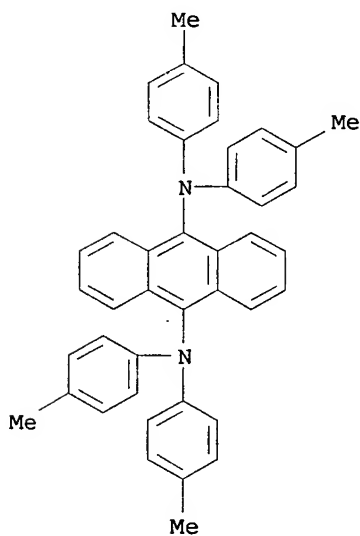
RN 177799-13-2 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-methoxy-2-methylphenyl)-N,N'-  
diphenyl- (9CI) (CA INDEX NAME)



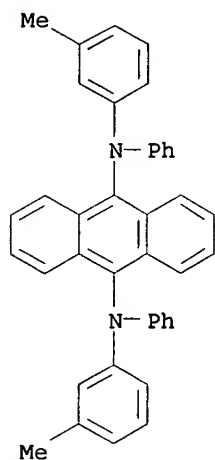
RN 177799-16-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
(CA INDEX NAME)

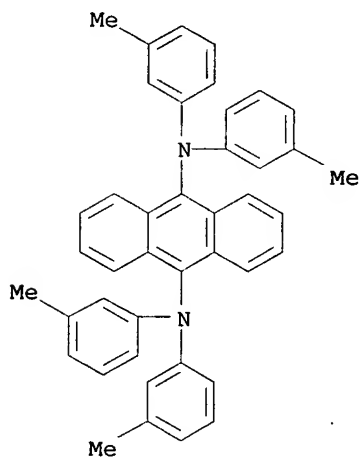


RN 189263-81-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(3-methylphenyl)-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)



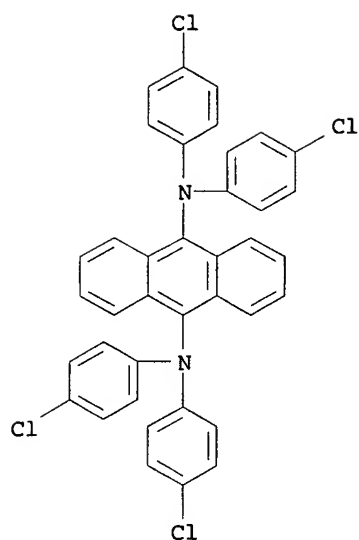
RN 189263-82-9 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(3-methylphenyl)- (9CI)  
(CA INDEX NAME)

RN 189263-83-0 HCAPLUS

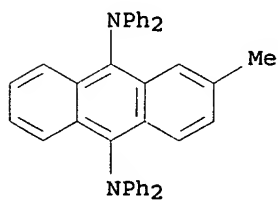
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-chlorophenyl)- (9CI)  
(CA INDEX NAME)





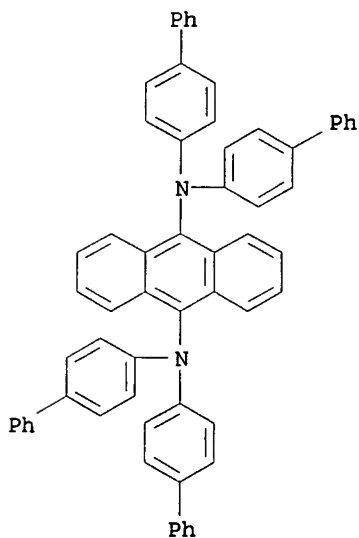
RN 189263-84-1 HCAPLUS

CN 9,10-Anthracenediamine, 2-methyl-N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)

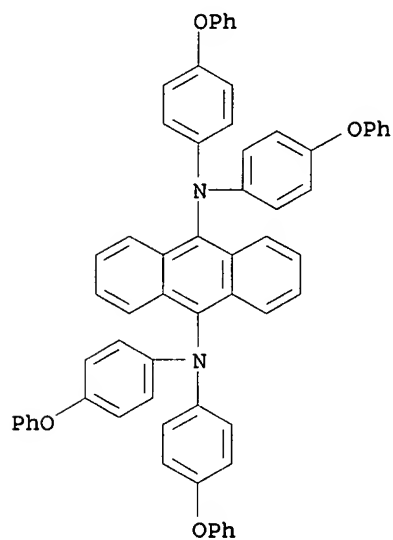


RN 189263-85-2 HCAPLUS

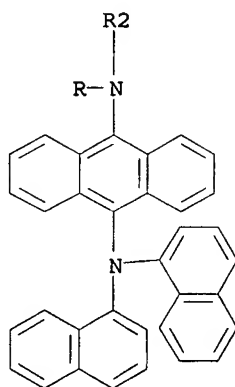
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis([1,1'-biphenyl]-4-yl)- (9CI) (CA INDEX NAME)



RN 189263-86-3 HCAPLUS  
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-phenoxyphenyl) - (9CI)  
(CA INDEX NAME)

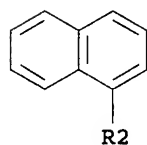
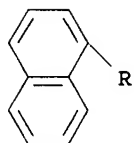


RN 189263-87-4 HCAPLUS  
CN 9,10-Anthracenediamine, N,N,N',N'-tetra-1-naphthalenyl- (9CI) (CA  
INDEX NAME)

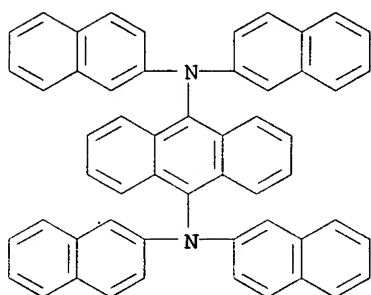


PAGE 1-A

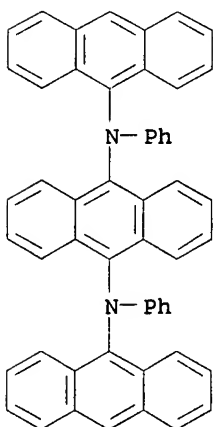
PAGE 2-A



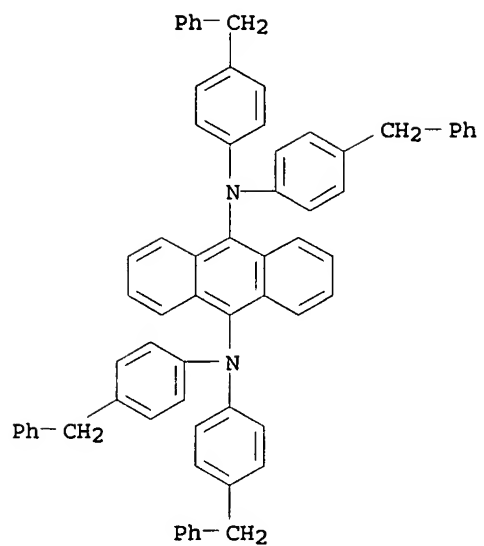
RN 189263-88-5 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetra-2-naphthalenyl- (9CI) (CA  
 INDEX NAME)



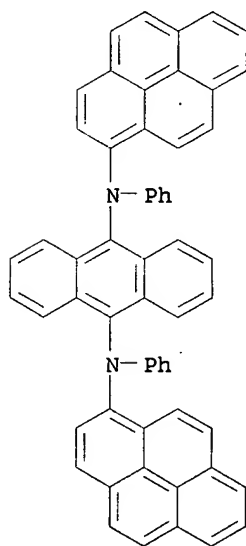
RN 189263-89-6 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-di-9-anthracenyl-N,N'-diphenyl- (9CI)  
 (CA INDEX NAME)



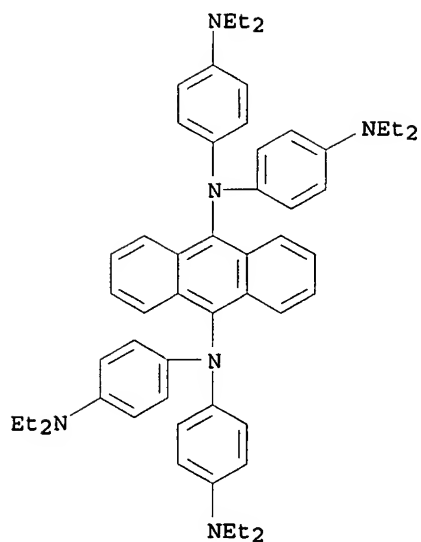
RN 189263-90-9 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(phenylmethyl)phenyl]-  
 (9CI) (CA INDEX NAME)



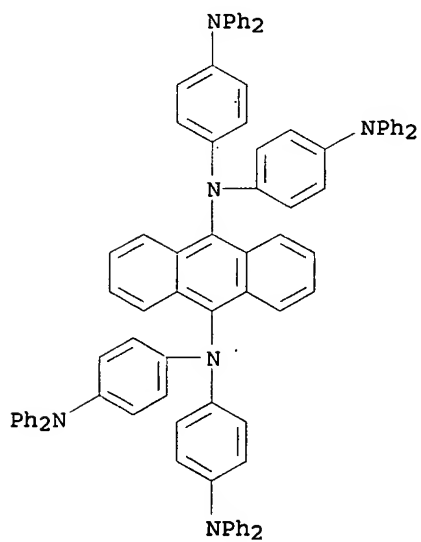
RN 189263-91-0 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-diphenyl-N,N'-di-1-pyrenyl- (9CI)  
 (CA INDEX NAME)



RN 189263-92-1 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(diethylamino)phenyl]-  
 (9CI) (CA INDEX NAME)

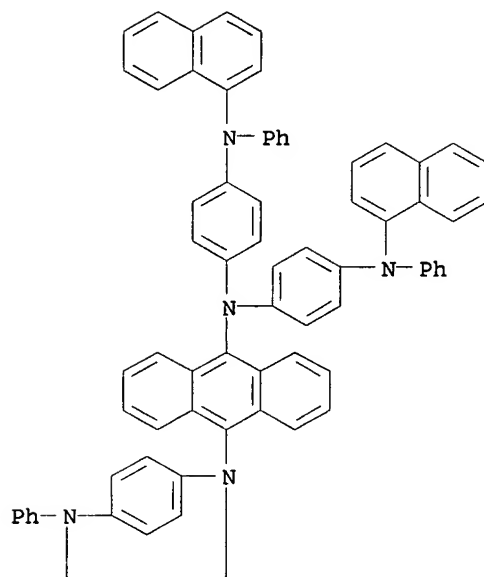


RN 189263-93-2 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(diethylamino)phenyl]- (9CI) (CA INDEX NAME)

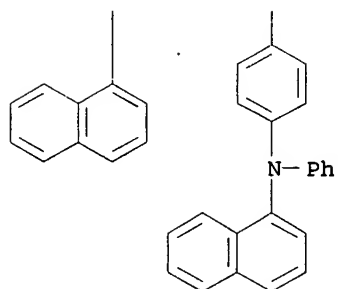


RN 189263-94-3 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-naphthalenylphenylamino)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

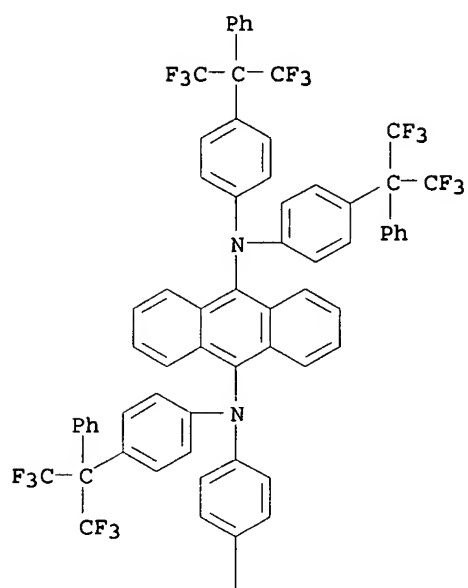


PAGE 2-A

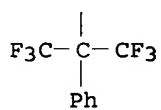


RN 189263-96-5 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(2,2,2-trifluoro-1-phenyl-1-(trifluoromethyl)ethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

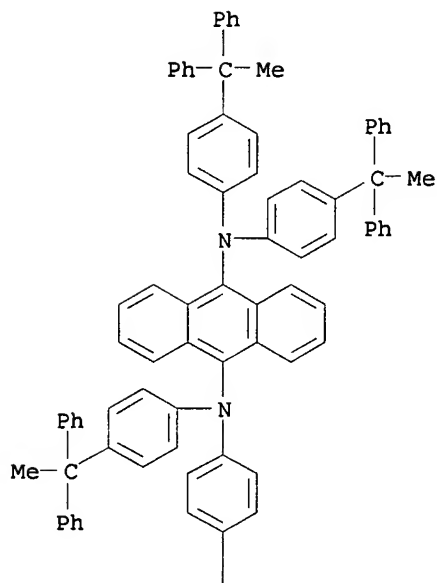


PAGE 2-A

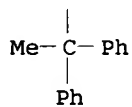


RN 189263-97-6 HCAPLUS  
CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1,1-diphenylethyl)phenyl]- (9CI) (CA INDEX NAME)

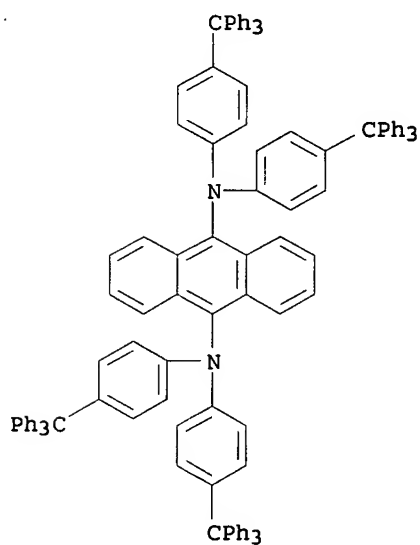
PAGE 1-A



PAGE 2-A



RN 189263-98-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(triphenylmethyl)phenyl]- (9CI) (CA INDEX NAME)

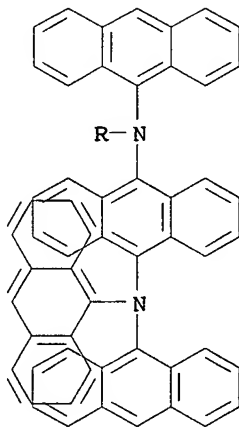


RN 189263-99-8 HCAPLUS

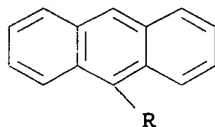


CN 9,10-Anthracenediamine, N,N,N',N'-tetra-9-anthracenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

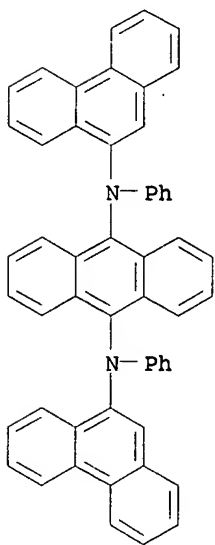


PAGE 2-A



RN 189264-00-4 HCAPLUS

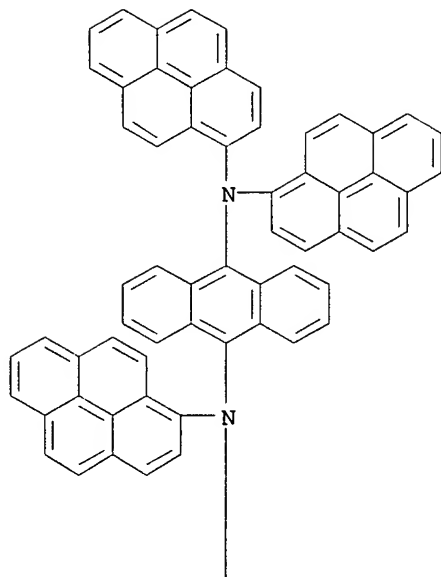
CN 9,10-Anthracenediamine, N,N'-di-9-phenanthrenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)



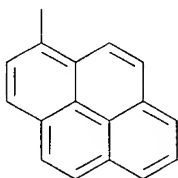
RN 189264-01-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetra-1-pyrenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

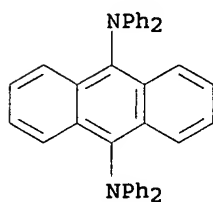


IT 177799-11-0P 177799-12-1P 177799-14-3P  
177799-15-4P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(anthracenediamine derivative-based light-emitting materials for organic electroluminescent devices and the devices)

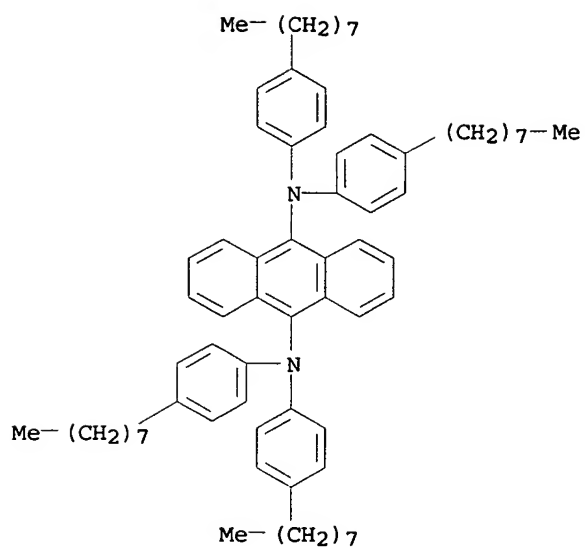
RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)

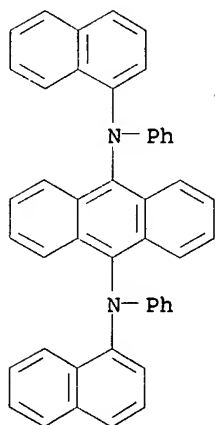


RN 177799-12-1 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-octylphenyl)- (9CI)  
(CA INDEX NAME)



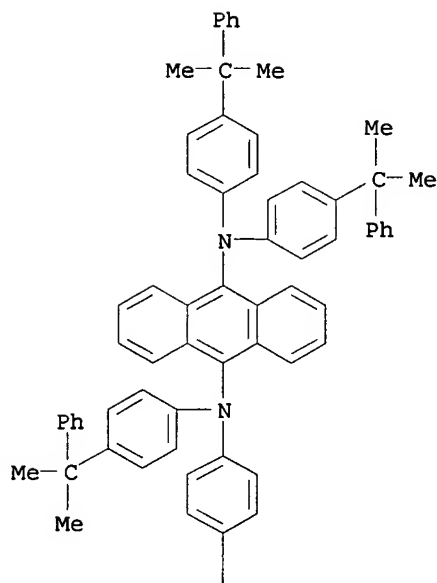
RN 177799-14-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl-  
(9CI) (CA INDEX NAME)

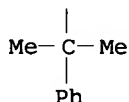
RN 177799-15-4 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-  
phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM H05B033-14  
ICS C09K011-06  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25  
ST anthracenediamine deriv **electroluminescent** material; LED  
anthracenediamine deriv **electroluminescent** material  
IT **Electroluminescent** devices  
(anthracenediamine derivative-based **light-emitting** materials for organic **electroluminescent** devices and the devices)  
IT Phosphors  
(**electroluminescent**; anthracenediamine derivative-based **light-emitting** materials for organic **electroluminescent** devices and the devices)  
IT 574-93-6, Phthalocyanine 905-62-4, 2,5-Bis(1-naphthyl)-1,3,4-oxadiazole **2085-33-8** 13978-85-3 14642-34-3  
14855-54-0 15082-28-7 16842-52-7 58473-78-2 61843-06-9  
65181-78-4 73276-70-7 89114-90-9 **123847-85-8**  
146162-63-2 150405-69-9 151026-65-2 164259-44-3  
166444-98-0 185690-39-5 188049-36-7 188049-37-8  
188049-39-0 188049-40-3 188049-41-4 189263-95-4  
RL: DEV (Device component use); USES (Uses)  
(anthracenediamine derivative-based **light-emitting** materials for organic **electroluminescent** devices and the devices)  
IT 517-51-1 980-26-7 1047-16-1 **1499-10-1** 7520-01-6  
38215-36-0 51325-91-8 99762-78-4 185505-35-5 186965-89-9  
RL: DEV (Device component use); MOA (Modifier or additive use);

## USES (Uses)

(anthracenediamine derivative-based light-emitting materials for organic electroluminescent devices and the devices)

IT 177799-13-2 177799-16-5 189263-81-8  
189263-82-9 189263-83-0 189263-84-1  
189263-85-2 189263-86-3 189263-87-4  
189263-88-5 189263-89-6 189263-90-9  
189263-91-0 189263-92-1 189263-93-2  
189263-94-3 189263-96-5 189263-97-6  
189263-98-7 189263-99-8 189264-00-4  
189264-01-5

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(anthracenediamine derivative-based light-emitting materials for organic electroluminescent devices and the devices)

IT 177799-11-0P 177799-12-1P 177799-14-3P  
177799-15-4P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(anthracenediamine derivative-based light-emitting materials for organic electroluminescent devices and the devices)

IT 84-65-1, Anthraquinone 90-30-2, 1-Naphthyl-phenylamine  
101-67-7 122-39-4, Diphenylamine, reactions 523-27-3,  
9,10-Dibromoanthracene 10081-67-1 113705-11-6,  
9,10-Diiodoanthracene

RL: RCT (Reactant); RACT (Reactant or reagent)  
(anthracenediamine derivative-based light-emitting materials for organic electroluminescent devices and the devices)

L94 ANSWER 31 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:612438 HCAPLUS

DOCUMENT NUMBER: 125:234385

TITLE: Positive hole-transporting material and usage thereof

INVENTOR(S): Enokida, Toshio; Tamano, Michiko; Onikubo, Shunichi

PATENT ASSIGNEE(S): Toyo Ink Mfg Co, Japan

SOURCE: Jpn. Kokai Tokyo Koho, 16 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08179526	A2	19960712	JP 1994-319695	1994 1222
JP 3269300	B2	20020325	JP 1994-319695	1994 1222

GI For diagram(s), see printed CA Issue.

AB The material has the general formula ABA [A = diamine derivative residue I ; R1-9= H, halo, (substituted) alkyl, (substituted) alkoxy, (substituted) thioalkoxy, cyano, (mono- or di-substituted) amino, OH, SH, (substituted) aryloxy, (substituted) arylthio, (substituted) aromatic ring, (substituted) heterocycle; ≥1 of each of R1-3, R4-6, and R7-9 is not H and the adjacent groups may

form alicyclic, carbocyclic aromatic, or heterocyclic aromatic rings which may be substituted; X = divalent aromatic ring residue; B = alicyclic residue II ; Y = (substituted) alkyl; n = 2-7; m = 0-2n]. Organic **electroluminescent** devices comprising  $\geq 1$  organic compound thin film **luminescent** layers  $\geq 1$  of which contains the material, and electrophotog. photoreceptors containing a charge-generating agent and the material are also claimed. The material shows good pos. hole-transporting properties and high quality **electroluminescent** devices and photoreceptors are obtained by using it. Thus, III was used typically for the material, which was prepared by reacting cyclohexanone with 9,10-bis(4-butylphenylphenylamino) **phenanthrene**.

IT 181796-79-2

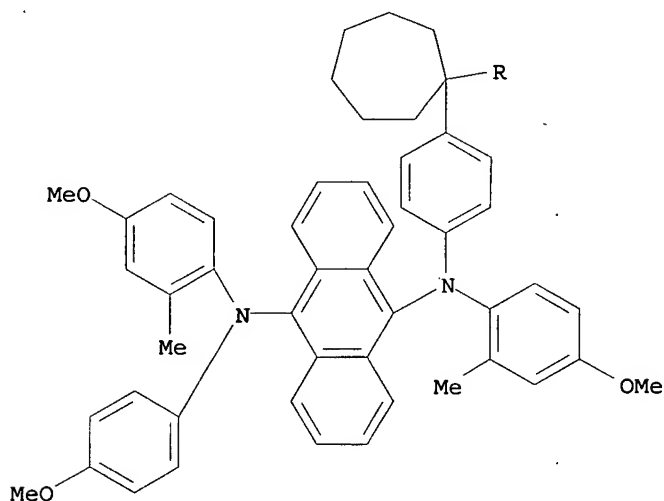
RL: DEV (Device component use); USES (Uses)

(pos. hole transporting agent for electrophotog. photoreceptor and **electroluminescent** device)

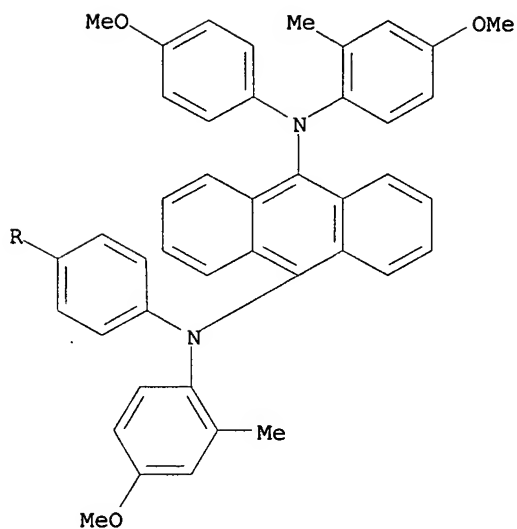
RN 181796-79-2 HCAPLUS

CN 9,10-Anthracenediamine, N,N''-(cycloheptylidenedi-4,1-phenylene)bis[N,N'-bis(4-methoxy-2-methylphenyl)-N'-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IT 181796-75-8P

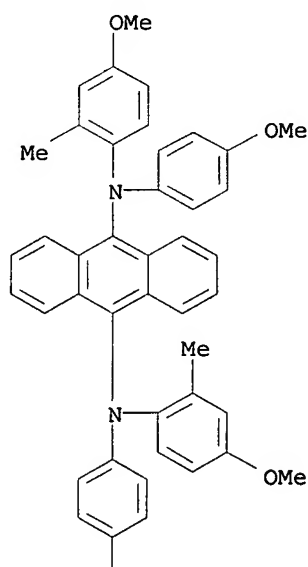
RL: DEV (Device component use); PNU (Preparation, unclassified);  
 PREP (Preparation); USES (Uses)

(pos. hole transporting agent for electrophotog. photoreceptor  
 and electroluminescent device)

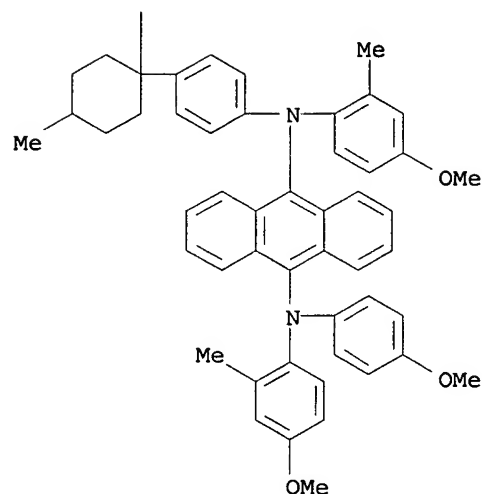
RN 181796-75-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-[(4-methylcyclohexylidene)di-4,1-  
 phenylene]bis[N,N'-bis(4-methoxy-2-methylphenyl)-N'-(4-  
 methoxyphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

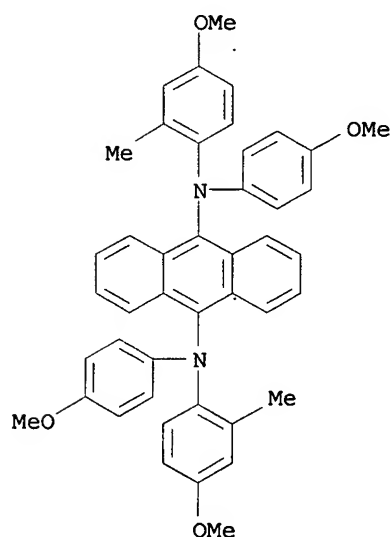


IT 181797-03-5

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with cyclohexanone derivative)

RN 181797-03-5 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-methoxy-2-methylphenyl)-N,N'-bis(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



IC ICM G03G005-06

ICS G03G005-06

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 25, 76

ST electrophotog photoreceptor pos hole transporting agent;

electroluminescence device pos hole transporting agent

IT Electroluminescent devices

(electroluminescent devices containing pos. hole transporting agent)

IT 181796-76-9 181796-77-0 181796-78-1 181796-79-2

181796-80-5 181796-81-6 181796-82-7 181796-84-9



181796-86-1 181796-88-3 181796-90-7 181796-92-9  
 181796-94-1 181796-96-3 181796-98-5 181796-99-6  
 181797-00-2 181797-01-3 181797-02-4

RL: DEV (Device component use); USES (Uses)  
 (pos. hole transporting agent for electrophotog. photoreceptor  
 and electroluminescent device)

IT 181796-74-7P 181796-75-8P

RL: DEV (Device component use); PNU (Preparation, unclassified);  
 PREP (Preparation); USES (Uses)  
 (pos. hole transporting agent for electrophotog. photoreceptor  
 and electroluminescent device)

IT 176443-22-4 181797-03-5

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction with cyclohexanone derivative)

L94 ANSWER 32 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:369159 HCAPLUS

DOCUMENT NUMBER: 125:71790

TITLE: Diaryl amine derivative, its manufacture, and  
 its usage

INVENTOR(S): Tamano, Michiko; Onikubo, Shunichi; Kamimura,  
 Toshifumi; Ogawa, Tadashi; Enokida, Toshio

PATENT ASSIGNEE(S): Toyo Ink Mfg Co, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

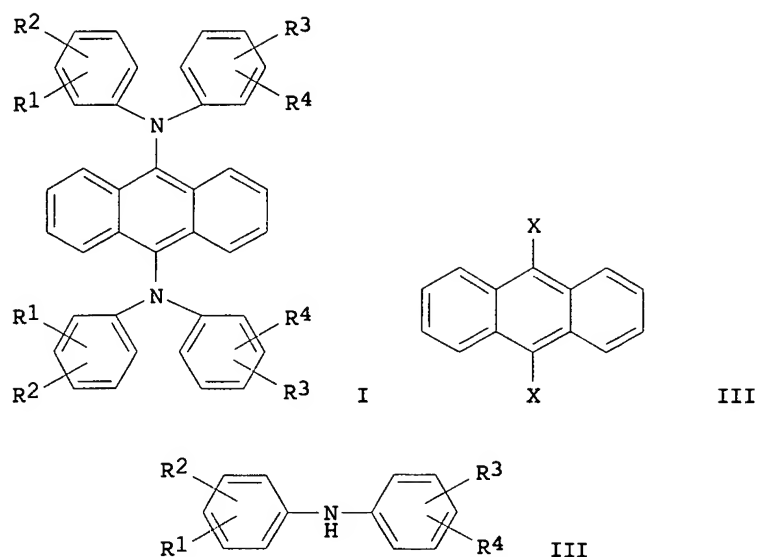
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 08053397	A2	19960227	JP 1994-190244	1994 0812

PRIORITY APPLN. INFO.: <--  
 JP 1994-190244

1994  
0812

OTHER SOURCE(S): MARPAT 125:71790  
 GI



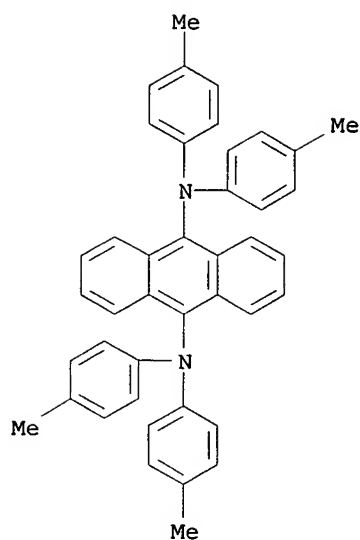
AB    Diaryl amine I (R1-4 = H, halo, (substituted) alkyl, (substituted) alkoxy; R1 and R2, R3 and R4 may bond to form a condensed benzene ring) is claimed. Anthracene derivative II (X = halo) and diaryl amine compound III are reacted to form I. Anthraquinone and III are reacted to form I. Pos. hole-transporting agent comprising I is claimed. Organic **electroluminescent** element comprising a layer containing the pos. hole-transporting agent is claimed. Electrophotog. photoreceptor containing a charge-generating agent and I as a pos. hole-transporting agent is also claimed. The **electroluminescent** element shows strong **luminescence**, durability and the photoreceptor shows high sensitivity.

IT    177799-16-5 177799-17-6 177799-18-7  
177799-19-8 177799-20-1

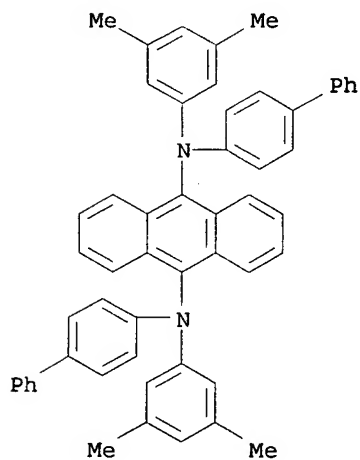
RL: DEV (Device component use); USES (Uses)  
(diaryl amine derivative for **electroluminescent** element  
and electrophotog. photoreceptor)

RN    177799-16-5 HCAPLUS

CN    9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-methylphenyl)- (9CI)  
(CA INDEX NAME)

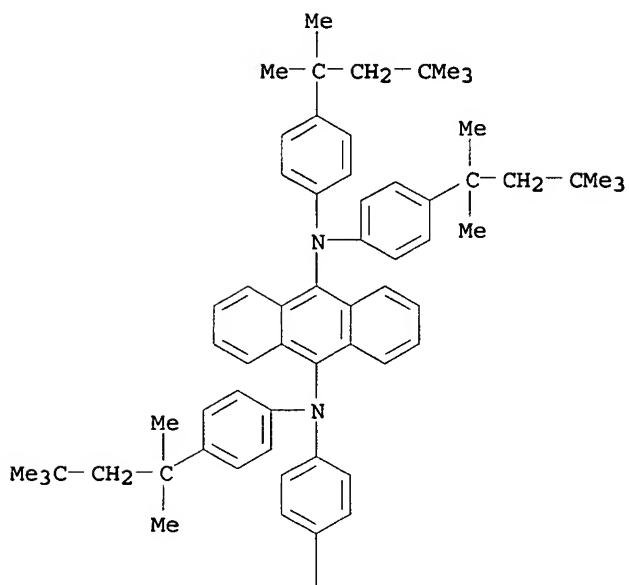


RN 177799-17-6 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis([1,1'-biphenyl]-4-yl)-N,N'-bis(3,5-dimethylphenyl)- (9CI) (CA INDEX NAME)

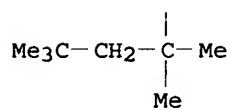


RN 177799-18-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1,1,3,3-tetramethylbutyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

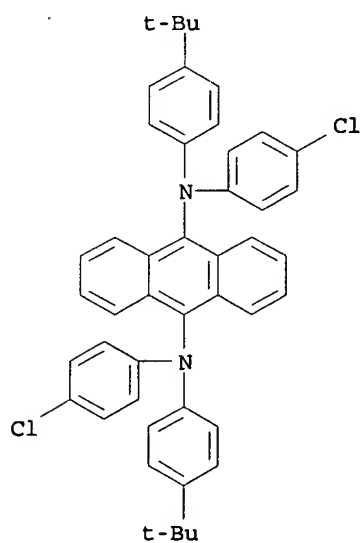


PAGE 2-A



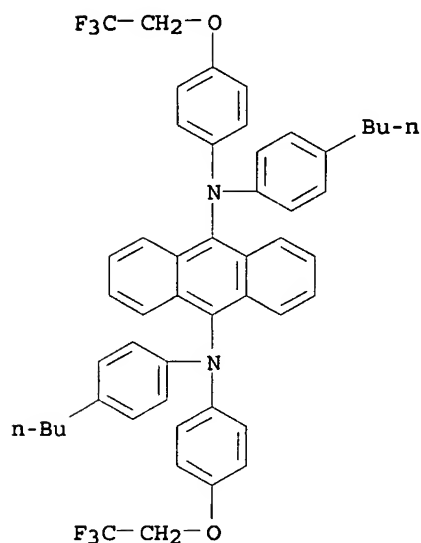
RN 177799-19-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-chlorophenyl)-N,N'-bis[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



RN 177799-20-1 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-butylphenyl)-N,N'-bis[4-(2,2,2-trifluoroethoxy)phenyl]- (9CI) (CA INDEX NAME)



IT 177799-11-0P 177799-12-1P 177799-13-2P

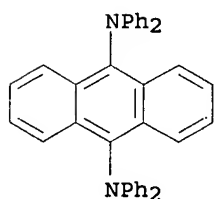
177799-14-3P 177799-15-4P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(diaryl amine derivative for electroluminescent element and electrophotog. photoreceptor)

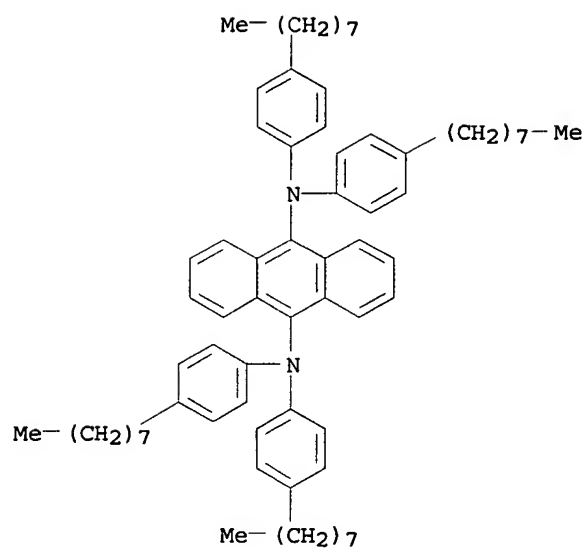
RN 177799-11-0 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetraphenyl- (9CI) (CA INDEX NAME)



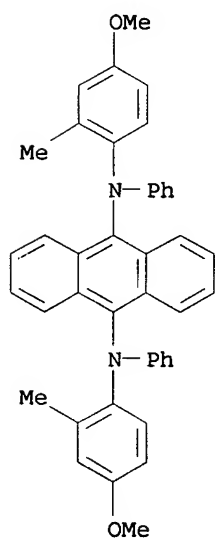
RN 177799-12-1 HCAPLUS

CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis(4-octylphenyl)- (9CI) (CA INDEX NAME)



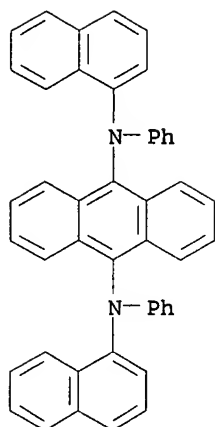
RN 177799-13-2 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(4-methoxy-2-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)



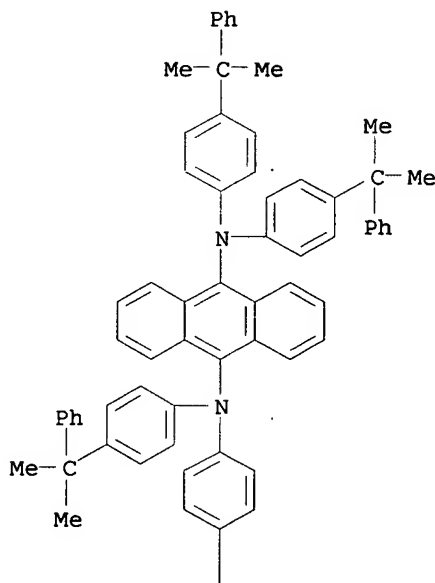
RN 177799-14-3 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

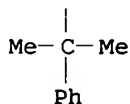


RN 177799-15-4 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N,N',N'-tetrakis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



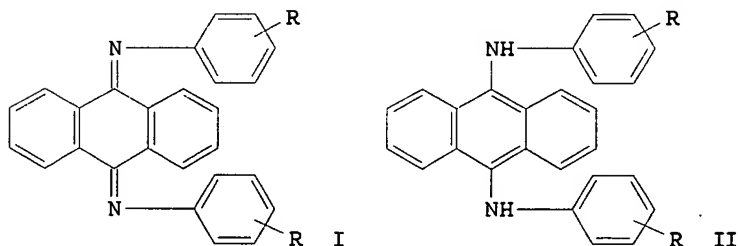
PAGE 2-A



IC ICM C07C211-61  
 ICS C07C209-18; C07C217-92; C09K011-06; G03G005-06; H05B033-14  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 ST diaryl amine prepn electroluminescent element; pos hole

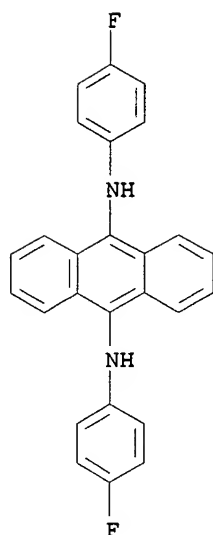
transporting agent electrophotog  
 IT Electrophotographic photoconductors and photoreceptors  
 (diaryl amine derivative for electroluminescent element  
 and electrophotog. photoreceptor)  
 IT 177799-16-5 177799-17-6 177799-18-7  
 177799-19-8 177799-20-1  
 RL: DEV (Device component use); USES (Uses)  
 (diaryl amine derivative for electroluminescent element  
 and electrophotog. photoreceptor)  
 IT 177799-11-0P 177799-12-1P 177799-13-2P  
 177799-14-3P 177799-15-4P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)  
 (diaryl amine derivative for electroluminescent element  
 and electrophotog. photoreceptor)

L94 ANSWER 33 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1982:34780 HCAPLUS  
 DOCUMENT NUMBER: 96:34780  
 TITLE: Synthesis of halogen derivatives of  
 9,10-bis(arylamino)anthracenes  
 AUTHOR(S): Savel'eva, I. S.  
 CORPORATE SOURCE: Inst. Elementoorg. Soedin. im. Nesmeyanova,  
 Moscow, USSR  
 SOURCE: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva  
 im. D. I. Mendeleeva (1981), 26(5),  
 596-7  
 CODEN: ZVKOA6; ISSN: 0373-0247  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Russian  
 OTHER SOURCE(S): CASREACT 96:34780  
 GI

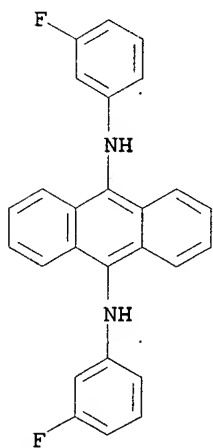


AB Reaction of anthraquinone with  $\text{RC}_6\text{H}_4\text{NH}_2$  ( $\text{R} = 3\text{-F}, 4\text{-F}, 4\text{-Br}$ ) gave  
 I which were reduced by  $\text{Zn-HCl}$  to II. UV luminescence  
 of II decreased in substituent order  $4\text{-F} > 3\text{-F} > 4\text{-Br}$ .  
 IT 80318-15-6P 80318-16-7P 80318-17-8P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and luminescence of)  
 RN 80318-15-6 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(4-fluorophenyl)- (9CI) (CA INDEX  
 NAME)

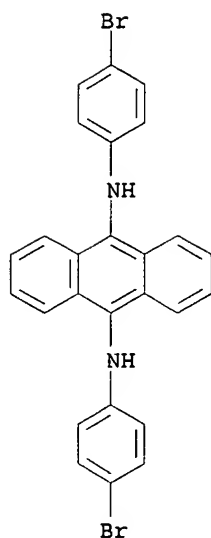




RN 80318-16-7 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(3-fluorophenyl)- (9CI) (CA INDEX  
NAME)



RN 80318-17-8 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(4-bromophenyl)- (9CI) (CA INDEX  
NAME)



CC 25-27 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 ST halophenylanthracenediamine luminescence;  
 anthracenediamine halophenyl luminescence  
 IT Luminescence  
 (of bis(halophenyl)anthracenediamine)  
 IT Substituent effect  
 (on luminescence of bis(halophenyl)anthracenediamines)  
 IT 80318-15-6P 80318-16-7P 80318-17-8P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (preparation and luminescence of)

L94 ANSWER 34 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1978:623402 HCAPLUS

DOCUMENT NUMBER: 89:223402

TITLE: Effect of the structure of substituents on  
 spectral-luminescent properties of  
 anthracene series compounds

AUTHOR(S): Shcheglova, N. A.; Shigorin, D. N.;  
 Dokunikhin, N. S.

CORPORATE SOURCE: Nauchno-Issled. Fiz.-Khim. Inst. im. Karpova,  
 Moscow, USSR

SOURCE: Zhurnal Fizicheskoi Khimii (1978),  
 52(9), 2182-6

CODEN: ZFKHA9; ISSN: 0044-4537

DOCUMENT TYPE: Journal

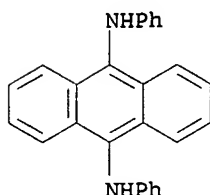
LANGUAGE: Russian

AB The absorption and luminescence spectra was studied for  
 9,10-bis(o-dibenzoyl)anthracene, 9,10-bis(N-phenylamino)  
 anthracene, and 9,10-bis(phenylazomethine)  
 anthracene in EtOH and methylcyclohexane-isopentane mixts.  
 at 298 and 77 K. The nature of the emission spectra was  
 established and their quantum yields were measured. Differences  
 in the quantum yields are related to the structures of the compds.  
 and the different participation of the substituent in the  
 deactivation of the electronic excitation energy.

IT 2233-88-7  
 RL: PRP (Properties)  
 (luminescence and UV spectrum of)

RN 2233-88-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-diphenyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)

ST anthracene deriv luminescence UV

IT Luminescence

Ultraviolet and visible spectra  
(of anthracene derivs.)

IT 2233-88-7 7437-71-0 34863-09-7

RL: PRP (Properties)  
(luminescence and UV spectrum of)

L94 ANSWER 35 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1969:52773 HCAPLUS

DOCUMENT NUMBER: 70:52773

TITLE: Nonlinear quenching of luminescence

AUTHOR(S): Tolstoi, N. A.; Abramov, A. P.

CORPORATE SOURCE: Leningrad State Univ., Leningrad, USSR

SOURCE: Proc. Int. Conf. Lumin. (1968),  
Meeting Date 1966, Volume 2, 1403-7.  
Editor(s): Szigeti, G. Akad. Kiado: Budapest,  
Hung.

CODEN: 20LDAU

DOCUMENT TYPE: Conference

LANGUAGE: English

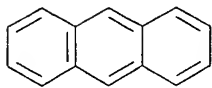
AB A new luminescence phenomenon has been discovered and named nonlinear quenching in which the quantum yield of luminescence strongly decreases with increasing excitation d. Practically, nonlinear quenching is observed under excitation with the usual flash lamps and a powerful quartz condenser. This would correspond to 1018-1020 quanta/sec. and/cm.2 Neither stimulation nor thermal heating are involved. The phenomenon was studied for a number of substances with a typical monomol. luminescence mechanism, e.g. monomol. luminophors with lifetimes ranging 10-3 (ruby)-5 + 10-9 sec. (anthracene, etc.). Nonlinear quenching is due to an interaction of migrating excited states, for instance, excitons, and this is discussed math. In quenching, 2 excited states meeting on the same center produce eventually a highly excited state; the latter returns nonradiatively into an ordinary excited state or into the ground state. Thus, 1 or 2 quanta are lost. The slight and random dependence of the effect on lifetime occurs because the probability of transfer is dependent on the lifetime. The lifetime is largely cancelled out, and, the effect of nonlinear quenching in various substances is determined by minor circumstances, e.g. by the overlapping of the absorption and emission spectra. Absolute data on nonlinear quenching permits the evaluation of consts., e.g. the cross section of interaction between 2 excitons. Nonlinear quenching may play an important part in luminophors of the recombinational type.

IT 120-12-7, properties 2233-88-7

RL: PRP (Properties)  
(luminescence of, nonlinear quenching of)

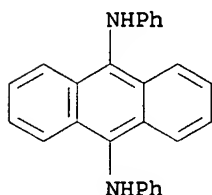
RN 120-12-7 HCAPLUS

CN Anthracene (8CI, 9CI) (CA INDEX NAME)



RN 2233-88-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-diphenyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 73 (Spectra and Other Optical Properties)  
 ST luminescence nonlinear quenching; nonlinear quenching  
 luminescence; quenching nonlinear luminescence  
 IT Energy transfer  
 (in luminescence nonlinear quenching)  
 IT Luminescence  
 (quenching of, energy transfer in relation to nonlinear)  
 IT Luminophore 1  
 Luminophore 7  
 Lumogen Orange Red  
 Lumogen Red 640  
 Uranium, dioxosulfato-, trihydrate  
 RL: PRP (Properties)  
 (luminescence of, nonlinear quenching of)  
 IT 54-21-7 92-94-4 120-12-7, properties 562-81-2  
 2233-88-7 7773-01-5 12174-49-1 13520-83-7  
 13820-74-1 14852-62-1 15843-71-7 50674-55-0, Pyrazoline,  
 triphenyl- 117925-62-9, Lumogen Light Blue  
 RL: PRP (Properties)  
 (luminescence of, nonlinear quenching of)

L94 ANSWER 36 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1966:482795 HCAPLUS  
 DOCUMENT NUMBER: 65:82795  
 ORIGINAL REFERENCE NO.: 65:15542a-d  
 TITLE: Polymers with permanently built-in  
 fluorescent compounds  
 PATENT ASSIGNEE(S): Dainichiseika Color & Chemicals Manuf. Co.,  
 Ltd.  
 SOURCE: 17 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
NL 6516713		19660623	NL 1965-16713	1965 1222

<--

PRIORITY APPLN. INFO.:

JP

1964

1222

GI For diagram(s), see printed CA Issue.

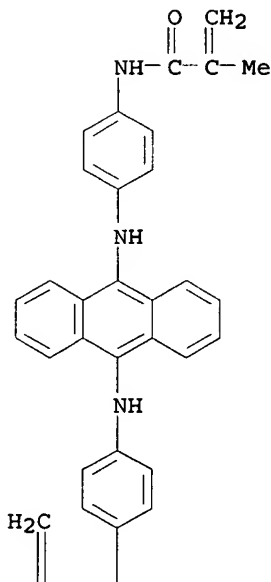
AB Fading and extraction with H<sub>2</sub>O are well known disadvantages of **fluorescent** compds. If a **fluorescent** compound containing a free radical is polymerized with one or more of the usual monomers, the polymer with the built-in **fluorescent** compound does not have these disadvantages. This polymer can also be used for reaction with other free radicals containing substances such as precondensed thermosetting resins. Thus, 10 g. Na diamino-stilbenedisulfonic acid was dispersed in 90 g. acetone and 7.5 g. pyridine added. After 30 min. 10.5 g. methacryloyl chloride was added at 5-10° and the mixture stirred for 2 h. to 17 g. (I). To 100 g. H<sub>2</sub>O 10 g. I, 30 g. acrylamide, and 0.4 g. K<sub>2</sub>S<sub>2</sub>O<sub>8</sub> were added and the solution was kept at 70° 3 h. The polymer was precipitated with MeOH, redissolved in 300 g. H<sub>2</sub>O, and the pH adjusted to 9-9.5 with 5% aqueous Na<sub>2</sub>CO<sub>3</sub>. This polymer solution was added to 40 g. HCHO and then methylated at 60° 30 min. This solution was used to impregnate fabrics, paper, etc., which were heat treated. A permanent **fluorescent** character was obtained.

IT 15607-27-9, Acrylanilide, 4',4'''-(9,10-anthrylenediimino)bis[2-methyl-  
(polymerization of, with acrylates, olefins, vinyl compds., etc., and permanently **fluorescent** polymers therefrom)

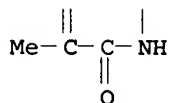
RN 15607-27-9 HCAPLUS

CN Acrylanilide, 4',4'''-(9,10-anthrylenediimino)bis[2-methyl- (7CI, 8CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



- IC C08F  
 CC 45 (Synthetic High Polymers)  
 IT Polymers  
     (fluorescent)  
 IT **Fluorescent** substances  
     (homopolymer)  
 IT Polymerization  
     (of **fluorescent** compds. with acrylates, olefins,  
     vinyl compds., etc.)  
 IT Methacrylic acid, 3-ester with 7-[(2,3-  
     dihydroxypropyl)amino]coumarin, polymer with acrylate  
     (olefins, etc., to **fluorescent** polymers)  
 IT 1,2-Propanediol, 3-chloro-, 1-acrylate, homopolymer  
     1,2-Propanediol, 3-chloro-, 1-methacrylate, homopolymer  
     Methacrylamide, polymer with 2-ethylhexyl methacrylate  
     Methacrylic acid, 3-chloro-2-hydroxypropyl ester, homopolymer  
     Vinyl acetate, polymer with Et vinyl oxalate  
     (with **fluorescent** compds.)  
 IT 27056-93-5, Acrylic acid, butyl ester, polymer with vinyl  
     propionate  
     (Bu ester polymerization, with **fluorescent** compds.)  
 IT 191-13-9, Pyranthrene 203-82-7, 1H-Benz[de]isoquinoline  
     4430-29-9, Isoviolanthrene 13354-54-6, Dibenzo[b,tuv]naphtho[2,1-  
     m]picene  
     (derivative)  
 IT 200-29-3, 7H-Benzo[e]perimidine 200-74-8, 7H-Benzimidazo[2,1-  
     a]benz[de]isoquinoline 230-62-6, 2H-Naphtho[1,2-  
     b]pyran  
     (derivs.)  
 IT 107-25-5, Ether, methyl vinyl  
     (ethylidifluoroaluminum as catalyst in, with **fluorescent**  
     compds.)  
 IT 79-10-7, Acrylic acid  
     (polymerization of (and acrylic acid derivs.), with  
     **fluorescent** compds.)  
 IT 13544-69-9, Coumarin, 7-[(2,3-dihydroxypropyl)amino]-,  
     3-methacrylate 13544-70-2, Acrylamide, N-[2,3-dihydro-1,3-dioxo-  
     2-(2,4-xylyl)-1H-benz[de]isoquinolin-6-yl]-2-methyl- 13544-71-3,  
     Acrylamide, N-(11-methoxy-7-oxo-7H-benzimidazo[2,1-  
     a]benz[de]isoquinolin-4-yl)-2-methyl- 13941-12-3,  
     2,2'-Stilbenedisulfonic acid, 4,4'-dimethacrylamido- 13941-13-4,  
     2,2'-Stilbenedisulfonic acid, 4,4'-bis[[4-(bis(2-  
     hydroxyethyl)amino)-6-(3,5-dichloro-4-methacrylamidoanilino)-s-  
     triazin-2-yl]amino]- 15607-26-8, Succinanilic acid,  
     3-methylene-4'-(2-oxo-2H-naphtho[1,2-b]pyran-3-yl)-  
     15607-27-9, Acrylanilide, 4',4'''-(9,10-  
     anthrylenediimino)bis[2-methyl- 30346-83-9, Acrylamide,  
     N-(5,11-dihydro-5,11-dioxodibenzo[b, tuv]-naphtho[2,1-m]picenyl)-  
     30346-84-0, Acrylamide, N-(8,16-dihydro-8,16-dioxopyranthrenyl)-2-  
     methyl-  
     (polymerization of, with acrylates, olefins, vinyl compds., etc., and  
     permanently **fluorescent** polymers therefrom)  
 IT 75-01-4, Ethylene, chloro- 75-35-4, Ethylene, 1,1-dichloro-  
     78-79-5, Isoprene 78-94-4, 3-Buten-2-one 79-06-1, Acrylamide  
     80-62-6, Methyl methacrylate 88-12-0, 2-Pyrrolidinone, 1-vinyl-  
     100-42-5, Styrene 106-92-3, Propane, 1-(allyloxy)-2,3-epoxy-  
     106-99-0, 1,3-Butadiene 107-13-1, Acrylonitrile 115-11-7,  
     Propene, 2-methyl- (isobutylene) 126-99-8, 1,3-Butadiene,

- 2-chloro- 556-52-5, 1-Propanol, 2,3-epoxy- 814-68-6, Acryloyl chloride 923-02-4, Acrylamide, N-(hydroxymethyl)-2-methyl-924-42-5, Acrylamide, N-(hydroxymethyl)- 1337-81-1, Pyridine, vinyl- 2499-59-4, Acrylic acid, octyl ester 3194-70-5, s-Triazine, 2,4-diamino-6-vinyl- 3326-90-7, Acrylic acid, 3-chloro-2-hydroxypropyl ester 13370-08-6, Urea, vinyl-13544-74-6, Methanol, [(6-vinyl-s-triazine-2,4-diyl)bis(methylimino)]di- 13544-75-7, Acrylamide, N-butyl-N-(hydroxymethyl)- 13941-15-6, Methanol, [(6-vinyl-s-triazine-2,4-diyl)bis(butylimino)]di-(polymerization of, with **fluorescent** compds.)
- IT 106-90-1, Acrylic acid, 2,3-epoxypropyl ester (polymerization with **fluorescent** compds.)
- IT 96-33-3, Acrylic acid, methyl ester 140-88-5, Acrylic acid, ethyl ester (polymerization, with **fluorescent** compds.)
- IT 26937-45-1, Methacryloyl chloride, homopolymer 113889-78-4, Methacrylic acid, block polymer with Me methacrylate 790672-07-0, Methacrylic acid, polymer with Et vinyl sulfone (with **fluorescent** compds.)

L94 ANSWER 37 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1959:247 HCAPLUS

DOCUMENT NUMBER: 53:247

ORIGINAL REFERENCE NO.: 53:33a-b

TITLE: Determination of molecular volumes in solutions by the use of polarized luminescence

AUTHOR(S): Zhevandrov, N. D.; Nikolaev, V. P.

SOURCE: Doklady Akademii Nauk SSSR (1957), 113, 1025-8

CODEN: DANKAS; ISSN: 0002-3264

DOCUMENT TYPE: Journal

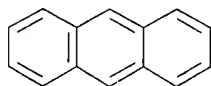
LANGUAGE: Unavailable

AB The measurement of **fluorescence** polarization was used to determine mol. vols. of several compds. (phthalimides, acridines, and **anthracenes**). Glycerol, castor oil, and liquid petrolatum were used as solvents.

IT 120-12-7, **Anthracene** (derivs., mol. volume of, determination of)

RN 120-12-7 HCAPLUS

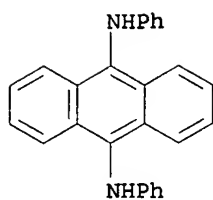
CN Anthracene (8CI, 9CI) (CA INDEX NAME)



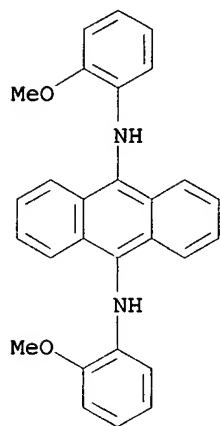
IT 2233-88-7, 9,10-Anthracenediamine, N,N'-diphenyl-103281-00-1, 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)- 115388-35-7, 9,10-Anthracenediamine, N,N'-bis(m-chlorophenyl)- (mol. volume determination of)

RN 2233-88-7 HCAPLUS

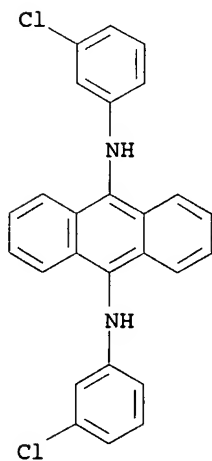
CN 9,10-Anthracenediamine, N,N'-diphenyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 103281-00-1 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)- (6CI) (CA  
 INDEX NAME)



RN 115388-35-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(m-chlorophenyl)- (6CI) (CA INDEX  
 NAME)



CC 2 (General and Physical Chemistry)  
 IT Molecular volume  
 (determination by polarized luminescence)  
 IT Fluorescence  
 (polarization of, mol. volume and)  
 IT 120-12-7, Anthracene



(derivs., mol. volume of, determination of)

IT 65-61-2, Acridine Orange 92-62-6, Proflavine 2233-88-7  
, 9,10-Anthracenediamine, N,N'-diphenyl- 2518-24-3, Phthalimide,  
3-amino- 10495-38-2, Phthalimide, 3-amino-6-dimethylamino-  
103281-00-1, 9,10-Anthracenediamine, N,N'-bis(o-  
methoxyphenyl)- 115388-35-7, 9,10-Anthracenediamine,  
N,N'-bis(m-chlorophenyl)-  
(mol. volume determination of)

L94 ANSWER 38 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1959:246 HCAPLUS

DOCUMENT NUMBER: 53:246

ORIGINAL REFERENCE NO.: 53:33a-b

TITLE: Determination of molecular volumes in  
solutions by the use of polarized  
luminescence

AUTHOR(S): Zhevandrov, N. D.; Nikolaev, V. P.

CORPORATE SOURCE: P. N. Lebedev Phys. Inst., Acad. Sci.

U.S.S.R., Moscow

SOURCE: Soviet Phys. "Doklady" (1957), 2,  
175-8

DOCUMENT TYPE: Journal

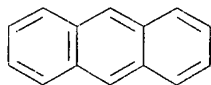
LANGUAGE: English

AB The measurement of fluorescence polarization was used to  
determine mol. vols. of several compds. (phthalimides, acridines, and  
anthracenes). Glycerol, castor oil, and liquid petrolatum  
were used as solvents.

IT 120-12-7, Anthracene  
(derivs., mol. volume of, determination of)

RN 120-12-7 HCAPLUS

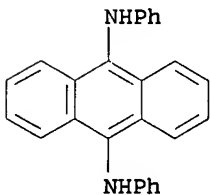
CN Anthracene (8CI, 9CI) (CA INDEX NAME)



IT 2233-88-7, 9,10-Anthracenediamine, N,N'-diphenyl-  
103281-00-1, 9,10-Anthracenediamine, N,N'-bis(o-  
methoxyphenyl)- 115388-35-7, 9,10-Anthracenediamine,  
N,N'-bis(m-chlorophenyl)-  
(mol. volume determination of)

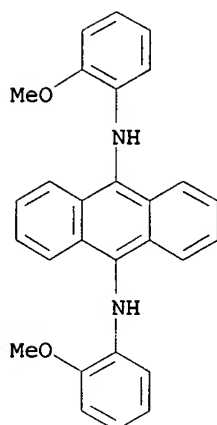
RN 2233-88-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-diphenyl- (6CI, 7CI, 8CI, 9CI) (CA  
INDEX NAME)

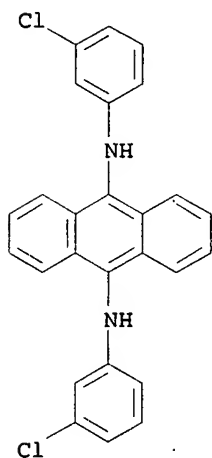


RN 103281-00-1 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)- (6CI) (CA  
INDEX NAME)



RN 115388-35-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(m-chlorophenyl)- (6CI) (CA INDEX NAME)



CC 2 (General and Physical Chemistry)  
 IT Molecular volume  
     (determination by polarized luminescence)  
 IT **Fluorescence**  
     (polarization of, mol. volume and)  
 IT **120-12-7, Anthracene**  
     (derivs., mol. volume of, determination of)  
 IT 65-61-2, Acridine Orange 92-62-6, Proflavine 2233-88-7  
     , 9,10-Anthracenediamine, N,N'-diphenyl- 2518-24-3, Phthalimide,  
     3-amino- 10495-38-2, Phthalimide, 3-amino-6-dimethylamino-  
     103281-00-1, 9,10-Anthracenediamine, N,N'-bis(o-  
     methoxyphenyl)- 115388-35-7, 9,10-Anthracenediamine,  
     N,N'-bis(m-chlorophenyl)-  
     (mol. volume determination of)

L94 ANSWER 39 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1956:39321 HCAPLUS  
 DOCUMENT NUMBER: 50:39321  
 ORIGINAL REFERENCE NO.: 50:7599g-i,7600a-b  
 TITLE: Relation of the polarization of  
         luminescence and other optical

properties of the anthracene derivatives to their structure

AUTHOR(S): Zhevandrov, N. D.

SOURCE: Trudy Fiz. Inst., Akad. Nauk S.S.S.R., Fiz. Inst. im. P. N. Lebedeva (1955), 6, 123-98

DOCUMENT TYPE: Journal

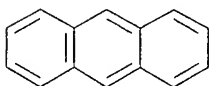
LANGUAGE: Unavailable

AB The effect of temperature on the fluorescence spectra was studied by the photoelec. and spectrographic methods for the following compds. in crystalline and vapor states as well as in ethanol, butanol, and glycerol solns.: anthracene; 9,10-dianilinoanthracene (I); 9,10-di-o-, m-, and p-toluidinoanthracene (II, III, IV); 9,10-bis-(o-, m-, p-chloroanilino)anthracene (V, VI, VII); 9,10-di-o-anisidinoanthracene (VIII); 9,10-bis(1- and 2-naphthylamino)-anthracene (IX, X). At temps. from 20° to -196° the following shifts in wave length,  $\Delta\lambda$  (m $\mu$ ) were observed for crystals of I-VIII, resp.: 1.03, 1.04, 1.13, 1.03, 1.05, 1.34, 1.0, and 1.05. The excitation period ( $\tau$ ) increased with a decrease in the temperature. The  $\Delta\tau$ 's (+109 sec.) for 20°-(-196°) range were: 1.2, 1.9, 2.7, 3.5, 1.7, 5.9, 1.2, 1.6, 4.8 for I-IX and 1.6, 3.0, 2.1, 1.7 for ethanol solns. of I, III, VI, and VII, resp. The increase in the intensity of spectrum, as expressed by the ratio I-196°/I20°, was found to be: 2.8, 2.1, 4.5, 3.6, 2.0, 10.5, 1.2, 3.2, 3.8 for crystalline I-IX and 23, 47, 16, 10, 41, 12, 24, 107 for ethanol solns. of I-VIII, 3.1 for VI in glycerol, and 23 for IX in butanol. The addition of alc. solns. (10-5 g./ml) of KI, aniline, hydroquinone and resorcinol to the anthracene derivs. resulted in an extinction of the fluorescence spectrum; xylene, hexane, and naphthalene were ineffective. From the analysis of polarizational spectra of glycerol solns. of every compound and from the comparison with their absorption spectra, the orientation of vertical oscillators of absorption and of emission to each other and to the functional groups of the compound have been elucidated. The orientation of mols. in crystal lattice has been determined from the study of polarization of fluorescence and of the dichroism of derivs. from anisotropic films. 91 references.

IT 120-12-7, Anthracene  
(and derivs., optical properties and structure of)

RN 120-12-7 HCAPLUS

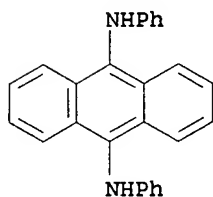
CN Anthracene (8CI, 9CI) (CA INDEX NAME)



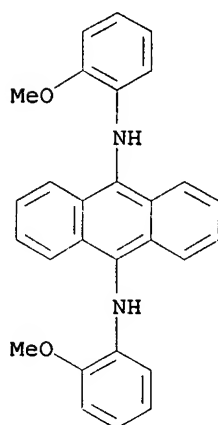
IT 2233-88-7, 9,10-Anthracenediamine, N,N'-diphenyl-  
103281-00-1, 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)- 115388-35-7, 9,10-Anthracenediamine, N,N'-bis[m-chlorophenyl]- 313648-86-1, 9,10-Anthracenediamine, N,N'-di-m-tolyl- 720669-49-8, 9,10-Anthracenediamine, N,N'-di-o-tolyl- 780039-15-8, 9,10-Anthracenediamine, N,N'-di-p-tolyl- 780039-16-9, 9,10-Anthracenediamine, N,N'-bis[p-chlorophenyl]- 780039-17-0, 9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]- 874521-17-2, 9,10-Anthracenediamine, N,N'-di-2-naphthyl- 874521-19-4, 9,10-Anthracenediamine, N,N'-di-1-naphthyl-  
(optical properties of)

RN 2233-88-7 HCAPLUS

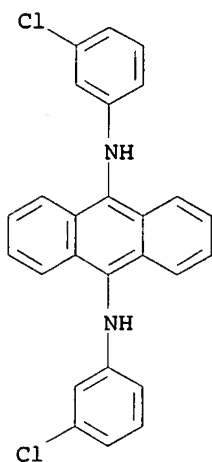
CN 9,10-Anthracenediamine, N,N'-diphenyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



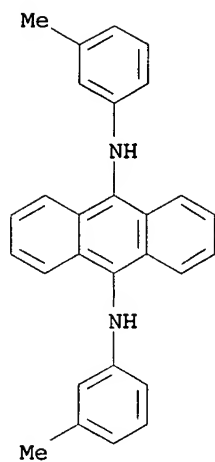
RN 103281-00-1 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)- (6CI) (CA INDEX NAME)



RN 115388-35-7 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(m-chlorophenyl)- (6CI) (CA INDEX NAME)

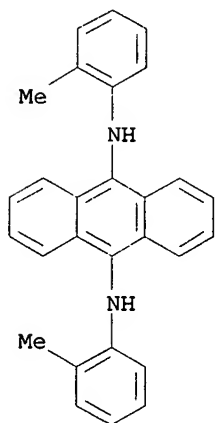


RN 313648-86-1 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(3-methylphenyl)- (9CI) (CA INDEX NAME)



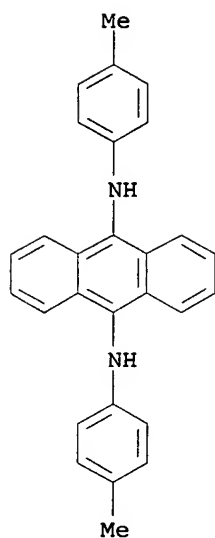
RN 720669-49-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(2-methylphenyl)- (9CI) (CA INDEX NAME)

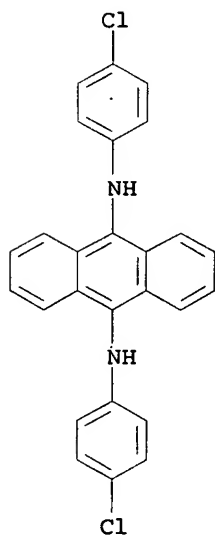


RN 780039-15-8 HCAPLUS

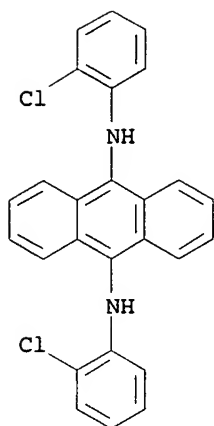
CN 9,10-Anthracenediamine, N,N'-di-p-tolyl- (5CI) (CA INDEX NAME)



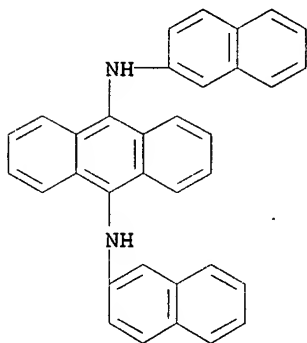
RN 780039-16-9 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[p-chlorophenyl]- (5CI) (CA INDEX  
NAME)



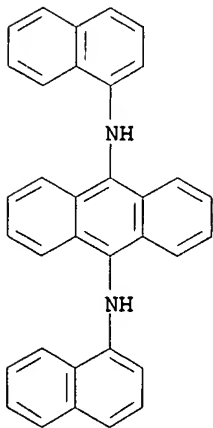
RN 780039-17-0 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]- (5CI) (CA INDEX  
NAME)



RN 874521-17-2 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-di-2-naphthyl- (5CI) (CA INDEX NAME)



RN 874521-19-4 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-di-1-naphthyl- (5CI) (CA INDEX NAME)



CC 3 (Electronic Phenomena and Spectra)  
IT **Fluorescence**  
Optical properties

(of anthracene derivs.)

IT Luminescence  
(of anthracene derivs., polarization of)

IT Polarization (of rays or waves)  
(of luminescence, of anthracene derivs.)

IT Chemical constitution  
(optical properties and, of anthracene derivs.)

IT 120-12-7, Anthracene  
(and derivs., optical properties and structure of)

IT 123-31-9, Hydroquinone  
(anthracene derivative fluorescence quenching by)

IT 62-53-3, Aniline  
(fluorescence of, quenching of)

IT 7681-11-0, Potassium iodide  
(fluorescence quenching by, in anthracene derivs.)

IT 108-46-3, Resorcinol  
(fluorescence quenching in anthracene derivs. by)

IT 2233-88-7, 9,10-Anthracenediamine, N,N'-diphenyl-  
103281-00-1, 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)- 115388-35-7, 9,10-Anthracenediamine, N,N'-bis[m-chlorophenyl]- 313648-86-1, 9,10-Anthracenediamine, N,N'-di-m-tolyl- 720669-49-8, 9,10-Anthracenediamine, N,N'-di-o-tolyl- 780039-15-8, 9,10-Anthracenediamine, N,N'-di-p-tolyl- 780039-16-9, 9,10-Anthracenediamine, N,N'-bis[p-chlorophenyl]- 780039-17-0, 9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]- 874521-17-2, 9,10-Anthracenediamine, N,N'-di-2-naphthyl- 874521-19-4, 9,10-Anthracenediamine, N,N'-di-1-naphthyl-  
(optical properties of)

L94 ANSWER 40 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1952:44616 HCAPLUS

DOCUMENT NUMBER: 46:44616

ORIGINAL REFERENCE NO.: 46:7435a-e

TITLE: Polarization of the fluorescence of organic crystals

AUTHOR(S): Zhevandrov, N. D.

CORPORATE SOURCE: P. N. Lebedev Phys. Inst. Acad. Sci. U.S.S.R., Moscow

SOURCE: Doklady Akademii Nauk SSSR (1952), 83, 677-80  
CODEN: DANKAS; ISSN: 0002-3264

DOCUMENT TYPE: Journal

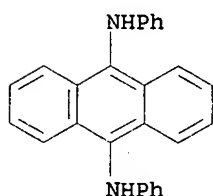
LANGUAGE: Unavailable

AB The degree of polarization P of the fluorescence was determined for a series of substances on crystalline powders placed under the microscope. The values found for each substance were independent of the size of the crystals; this is proof that the observed P is determined by the lattice structure of the given compound and by the anisotropy of its mols., and is not influenced by crystalline phenomena such as birefringence and reflections. This is further confirmed by the fact that immersion in glycerol or in oils results in a somewhat greater, rather than a smaller P. The observed values of P (I = diaminoanthracene): 9,10-Ph2-I 20; 9,10-ditolyl-I: ortho 12, meta 9, para 3; 9,10-dichlorophenyl-I: ortho 31, meta 10, para 28; 9,10-diorthomethoxyphenyl-I 35; anthracene (A) 39; 9,10-Br2-A 27; 3-aminophthalimide 15; 3-dimethylamino-6-aminophthalimide 20; salicylic acid 37; carbazole 15; UO2SO4 20%. For A, if the emitting oscillator is assumed to be parallel to the transverse axis of the mol., P is calculated, from the known crystal structure, to 57%. With the depolarizing effect of the thermal rotational (orientational)

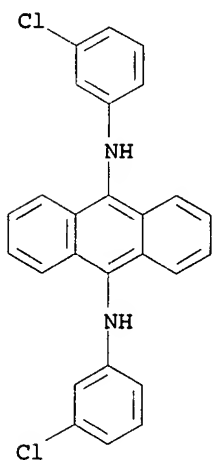


vibrations taken into account, one finds  $P = 45\%$ , fairly close to the observed  $P = 39\%$  (40% with immersion). Derivs. of A have a lower  $P$  than A itself, which is evidence that the mols. are oriented to one another at greater angles in the derivs. than in A. By means of an orientable Nicol in the path of the exciting beams, it was ascertained that, for a given substance,  $P$  is independent of the polarization of the exciting radiation. This is interpreted as indicative of migration of the excitation energy, resulting in its redistribution between the mols. during the life of the excited state.

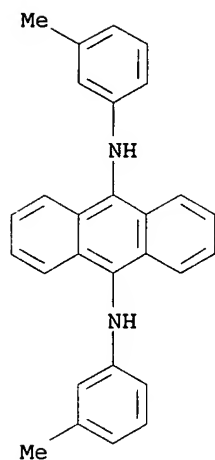
IT 2233-88-7, 9,10-Anthracenediamine, N,N'-diphenyl-  
 115388-35-7, 9,10-Anthracenediamine, N,N'-bis[m-  
 chlorophenyl]- 313648-86-1, 9,10-Anthracenediamine,  
 N,N'-di-m-tolyl- 720669-49-8, 9,10-Anthracenediamine,  
 N,N'-di-o-tolyl- 780039-15-8, 9,10-Anthracenediamine,  
 N,N'-di-p-tolyl- 780039-16-9, 9,10-Anthracenediamine,  
 N,N'-bis[p-chlorophenyl]- 780039-17-0,  
 9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]-  
 (fluorescence of)  
 RN 2233-88-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-diphenyl- (6CI, 7CI, 8CI, 9CI) (CA  
 INDEX NAME)



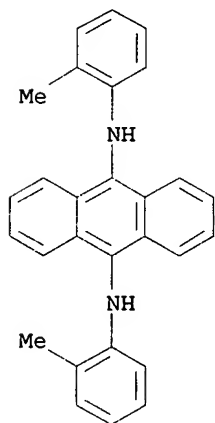
RN 115388-35-7 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(m-chlorophenyl)- (6CI) (CA INDEX  
 NAME)



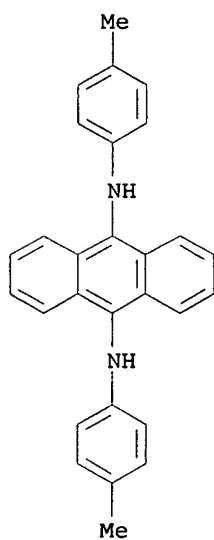
RN 313648-86-1 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(3-methylphenyl)- (9CI) (CA INDEX  
 NAME)



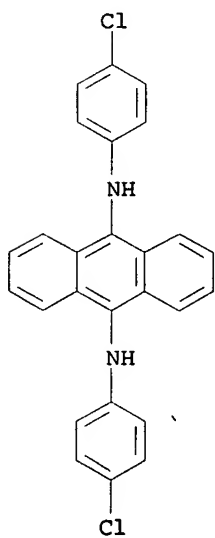
RN 720669-49-8 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis(2-methylphenyl)- (9CI) (CA INDEX NAME)



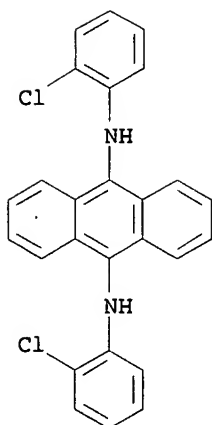
RN 780039-15-8 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-di-p-tolyl- (5CI) (CA INDEX NAME)



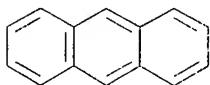
RN 780039-16-9 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[p-chlorophenyl]- (5CI) (CA INDEX  
NAME)



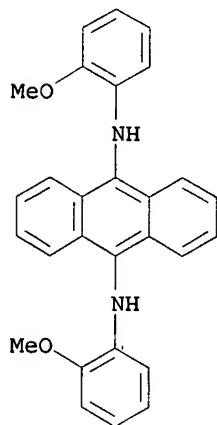
RN 780039-17-0 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]- (5CI) (CA INDEX  
NAME)



IT 120-12-7, Anthracene  
 (fluorescence of, polarization of)  
 RN 120-12-7 HCAPLUS  
 CN Anthracene (8CI, 9CI) (CA INDEX NAME)



IT 103281-00-1, 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)-  
 (polarization of fluorescence of)  
 RN 103281-00-1 HCAPLUS  
 CN 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)- (6CI) (CA INDEX NAME)



CC 3 (Electronic Phenomena and Spectra)  
 IT Polarization (of rays or waves)  
 (of fluorescence, of organic crystals)  
 IT Fluorescence  
 (polarization of, of organic crystals)  
 IT 523-27-3, Anthracene, 9,10-dibromo- 2233-88-7,  
 9,10-Anthracenediamine, N,N'-diphenyl- 115388-35-7,

9,10-Anthracenediamine, N,N'-bis[m-chlorophenyl]-  
 313648-86-1, 9,10-Anthracenediamine, N,N'-di-m-tolyl-  
 720669-49-8, 9,10-Anthracenediamine, N,N'-di-o-tolyl-  
 780039-15-8, 9,10-Anthracenediamine, N,N'-di-p-tolyl-  
 780039-16-9, 9,10-Anthracenediamine, N,N'-bis[p-  
 chlorophenyl]- 780039-17-0, 9,10-Anthracenediamine,  
 N,N'-bis[o-chlorophenyl]-  
 (fluorescence of)

IT 120-12-7, Anthracene 2518-24-3, Phthalimide,  
 3-amino- 10495-38-2, Phthalimide, 3-amino-6-dimethylamino-  
 (fluorescence of, polarization of)  
 IT 1314-64-3, Uranyl sulfate, UO2SO4 103281-00-1,  
 9,10-Anthracenediamine, N,N'-bis(o-methoxyphenyl)-  
 (polarization of fluorescence of)

L94 ANSWER 41 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1951:281 HCAPLUS

DOCUMENT NUMBER: 45:281

ORIGINAL REFERENCE NO.: 45:36a-e

TITLE: Polarization spectra of anthracene  
 derivatives

AUTHOR(S): Zhevandrov, N. D.

SOURCE: Doklady Akademii Nauk SSSR (1950),  
 74, 25-8

CODEN: DANKAS; ISSN: 0002-3264

DOCUMENT TYPE: Journal

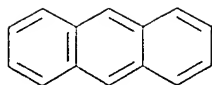
LANGUAGE: Unavailable

AB Curves of the variation of the degree of polarization P of the  
 fluorescence, in  $2 + 10^{-5}$  g./cc. solution in anhydrous  
 glycerol, with the wave length  $\lambda$  of the exciting radiation  
 are of the same shape for 9,10-(C6H5NH)2C14H8 and for its derivs.  
 9,10-(XC6H4NH)2C14H8, with X = o-Me, m-Me, p-Me,  
 o-Cl, m-Cl, and p-Cl. In the  $\lambda = 4000$  A. region, P  
 has a high pos. value, of the order of 40%; at about 3000 A., P  
 has a low but distinct pos. maximum, and from about 2850 A. on, P  
 becomes neg., about -10%. In 9,10-(C10H7NH)2C14H8, with both  
 $\alpha$ - and  $\beta$ -C10H7, the maximum at about 3000 A. is absent,  
 and, in the short-wave region, P remains pos., about +10%.  
 Rotational depolarization in the glycerol solution was slight. Of  
 the 2 absorption bands of the above C14H10 derivs., the band  
 around 2500 A. had previously (C.A. 43, 7823d) been shown to be  
 linked with the "longitudinal" axis of the mol., along the chain  
 of the 3 rings, whereas the long-wave absorption band is determined by  
 the "transverse" axis passing through the 9,10 positions. The  
 independence of the fluorescence spectrum of  $\lambda$   
 indicates that the fluorescence is determined by the same  
 oscillator, independently of the absorption band. On that basis,  
 the angle  $\alpha$  between the absorbing and the emitting  
 oscillator has been calculated, for each compound, from the  
 corresponding observed P by the Levshin-Perrin formula  $P = (3 \cos^2$   
 $\alpha - 1) / (\cos^2 \alpha + 3)$ , sep. for the long-wave ( $\alpha_1$ )  
 and the short-wave region ( $\alpha_2$ ). With all oscillators  
 assumed to lie in the same plane, the sum  $\alpha = \alpha_1 +$   
 $\alpha_2$  gives the angle between the long-wave and the short-wave  
 absorption oscillators. For the Ph derivs., this  $\alpha$  is close  
 to  $90^\circ$ , but in the naphthyl derivs.  $\alpha$  apprx.  
 $70^\circ$ . This is paralleled by the shift of the short-wave  
 absorption band in the naphthyl derivs., and may be due to an  
 unsym. disposition of the naphthyl groups. In the Ph derivs.,  
 $\alpha$  is closest to  $90^\circ$  for the ortho-substituted  
 derivs., smallest for the para derivs.

IT 120-12-7, Anthracene  
 (derivs., polarization spectra of)

RN 120-12-7 HCAPLUS

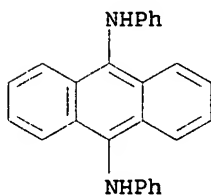
CN Anthracene (8CI, 9CI) (CA INDEX NAME)



IT 2233-88-7, 9,10-Anthracenediamine, N,N'-diphenyl-  
 115388-35-7, 9,10-Anthracenediamine, N,N'-bis[m-  
 chlorophenyl]- 313648-86-1, 9,10-Anthracenediamine,  
 N,N'-di-m-tolyl- 720669-49-8, 9,10-Anthracenediamine,  
 N,N'-di-o-tolyl- 780039-15-8, 9,10-Anthracenediamine,  
 N,N'-di-p-tolyl- 780039-16-9, 9,10-Anthracenediamine,  
 N,N'-bis[p-chlorophenyl]- 780039-17-0,  
 9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]-  
 874521-17-2, 9,10-Anthracenediamine, N,N'-di-2-naphthyl-  
 874521-19-4, 9,10-Anthracenediamine, N,N'-di-1-naphthyl-  
 (fluorescence of)

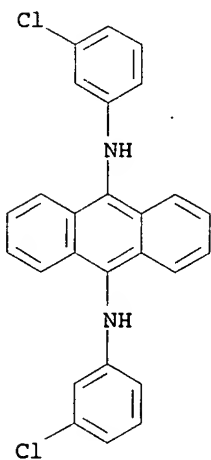
RN 2233-88-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-diphenyl- (6CI, 7CI, 8CI, 9CI) (CA  
 INDEX NAME)



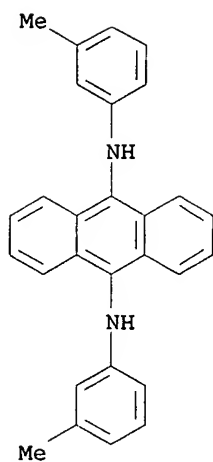
RN 115388-35-7 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(m-chlorophenyl)- (6CI) (CA INDEX  
 NAME)



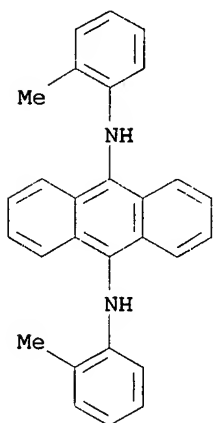
RN 313648-86-1 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(3-methylphenyl)- (9CI) (CA INDEX  
 NAME)



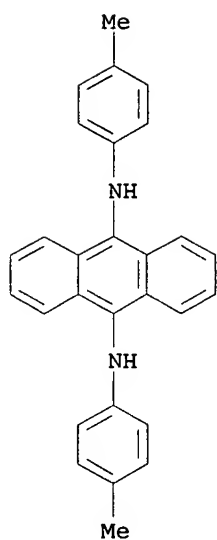
RN 720669-49-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-bis(2-methylphenyl)- (9CI) (CA INDEX NAME)

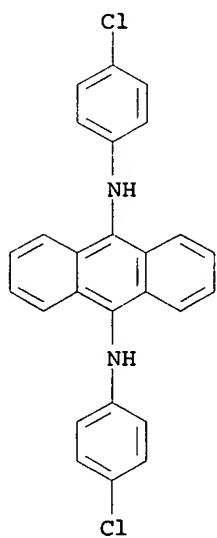


RN 780039-15-8 HCAPLUS

CN 9,10-Anthracenediamine, N,N'-di-p-tolyl- (5CI) (CA INDEX NAME)

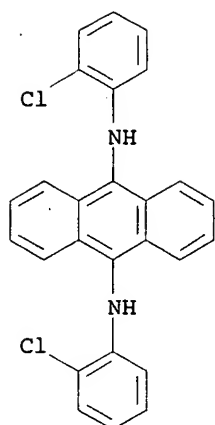


RN 780039-16-9 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[p-chlorophenyl]- (5CI) (CA INDEX NAME)

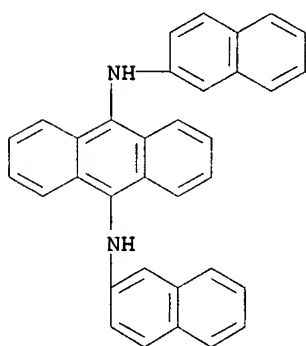


RN 780039-17-0 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]- (5CI) (CA INDEX NAME)

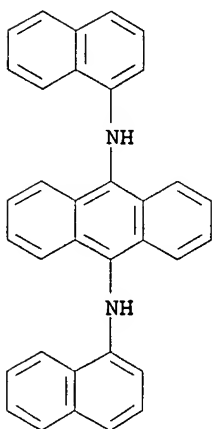




RN 874521-17-2 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-di-2-naphthyl- (5CI) (CA INDEX NAME)



RN 874521-19-4 HCAPLUS  
CN 9,10-Anthracenediamine, N,N'-di-1-naphthyl- (5CI) (CA INDEX NAME)



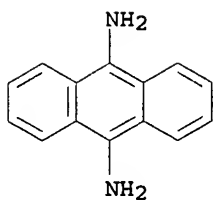
CC 3 (Electronic Phenomena and Spectra)  
IT Chemical constitution  
(fluorescence and, of anthracene derivs.)

IT Fluorescence  
(of anthracene derivs., polarization of)  
IT 120-12-7, Anthracene  
(derivs., polarization spectra of)  
IT 2233-88-7, 9,10-Anthracenediamine, N,N'-diphenyl-  
115388-35-7, 9,10-Anthracenediamine, N,N'-bis[m-  
chlorophenyl]- 313648-86-1, 9,10-Anthracenediamine,  
N,N'-di-m-tolyl- 720669-49-8, 9,10-Anthracenediamine,  
N,N'-di-o-tolyl- 780039-15-8, 9,10-Anthracenediamine,  
N,N'-di-p-tolyl- 780039-16-9, 9,10-Anthracenediamine,  
N,N'-bis[p-chlorophenyl]- 780039-17-0,  
9,10-Anthracenediamine, N,N'-bis[o-chlorophenyl]-  
874521-17-2, 9,10-Anthracenediamine, N,N'-di-2-naphthyl-  
874521-19-4, 9,10-Anthracenediamine, N,N'-di-1-naphthyl-  
(fluorescence of)

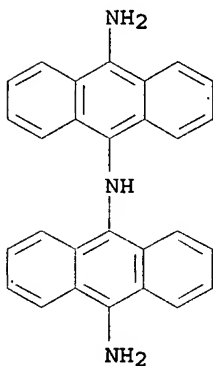
L94 ANSWER 42 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1941:27618 HCAPLUS  
DOCUMENT NUMBER: 35:27618  
ORIGINAL REFERENCE NO.: 35:4375F-i  
TITLE: Reductive ammonolysis of anthraquinone  
AUTHOR(S): Vorozhtsov, N. N.; Shkitin, V. P.  
SOURCE: Zhurnal Obshchei Khimii (1940), 10,  
883-93  
CODEN: ZOKHA4; ISSN: 0044-460X  
DOCUMENT TYPE: Journal  
LANGUAGE: Unavailable

AB Anthraquinone (I) does not react with 35% aqueous NH<sub>3</sub> in an autoclave at 200-20°, the addition of CuSO<sub>4</sub> and KClO<sub>3</sub> being without influence. In the presence of (NH<sub>4</sub>)<sub>2</sub>SO<sub>3</sub>, some reaction occurs. When Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub> (II) is used, 9,10-diaminoanthracene (III), red crystals, m. 140-2° (decomposition), is formed. The highest yields of III are obtained when equimol. amts. of I and II are heated with 35% NH<sub>3</sub> solution at 150° for 8 hrs. in an autoclave. III is decomposed to I by aqueous HCl, H<sub>2</sub>SO<sub>4</sub> and HNO<sub>3</sub>. HCl gas when introduced into a solution of III in C<sub>6</sub>H<sub>6</sub> yields a green salt almost insol. in C<sub>6</sub>H<sub>6</sub>. III does not react with aqueous alkali whereas it dissolves slowly in alc. alkali with the formation of I. III cannot be diazotized. Acetylation and benzoxylation of III yields 9,10-diacetamidanthracene and 9,10-dibenzamidanthracene, resp., which do not m. 320° and are insol. in organic solvents. Condensation of III with BzH gives 9,10-bis(benzylideneamino)anthracene, m. 255°. COCl<sub>2</sub> reacts with III in C<sub>6</sub>H<sub>6</sub> with the formation of 9,10-bis(chloroformamido)-anthracene which starts to m. 280° and is completely molten above 300° (decomposition). The red solution of III in C<sub>6</sub>H<sub>6</sub> turns yellow with green fluorescence when kept in the air for several days. When air is introduced into the hot C<sub>6</sub>H<sub>6</sub> solution of III, there are isolated bis(9-amino-10-anthryl)amine (IV), m. 141-2° (yield 60-70%), and a compound, C<sub>14</sub>H<sub>12</sub>O<sub>2</sub>N<sub>2</sub>, m. 155-6° (decomposition) (yield 10-15%), which is either 9,10-dihydroxaminoanthracene or 9,10-diamino-9,10-dihydroanthrahydroquinone. Oxidation of IV with KMnO<sub>4</sub> gives a compound, m. 212-15°, which possibly is 9-amino-9'-hydroxy-10,10'-dianthrylamine.

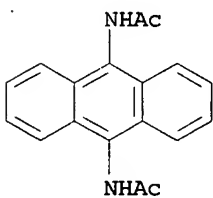
IT 53760-37-5, 9,10-Anthracenediamine  
(and derivs.)  
RN 53760-37-5 HCAPLUS  
CN 9,10-Anthracenediamine (9CI) (CA INDEX NAME)



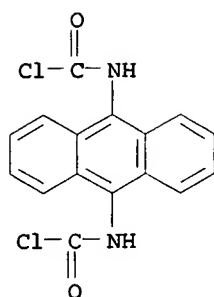
IT 855752-95-3, 9-Anthramine, 10,10'-iminodi-  
 856356-85-9, Anthracene, 9,10-diacetamido-  
 856356-88-2, Anthracene, 9,10-bis( $\alpha$ -  
 chloroformamido)- 857588-55-7, 9-Anthrol,  
 10-(10-amino-9-anthrylamino)- 857589-72-1,  
 Anthracene, 9,10-dibenzamido-  
 (preparation of)  
 RN 855752-95-3 HCAPLUS  
 CN Di-9-anthrylamine, 10,10'-diamino- (4CI) (CA INDEX NAME)



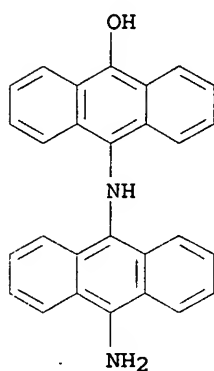
RN 856356-85-9 HCAPLUS  
 CN Anthracene, 9,10-diacetamido- (4CI) (CA INDEX NAME)



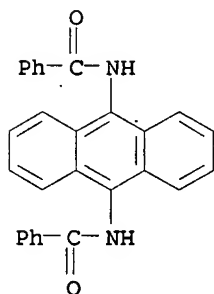
RN 856356-88-2 HCAPLUS  
 CN Anthracene, 9,10-bis( $\alpha$ -chloroformamido)- (4CI) (CA INDEX NAME)



RN 857588-55-7 HCAPLUS  
 CN 9-Anthrol, 10-(10-amino-9-anthrylamino)- (4CI) (CA INDEX NAME)



RN 857589-72-1 HCAPLUS  
 CN Anthracene, 9,10-dibenzamido- (4CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)  
 IT Anthracene, 9,10-dihydroxamino-  
 IT 53760-37-5, 9,10-Anthracenediamine  
 (and derivs.)  
 IT 110877-49-1, Dibenz[a,h]anthracene-7,14-dione,  
 5,12-dihydroxy- 855752-95-3, 9-Anthramine,  
 10,10'-iminodi- 855752-95-3, Di-9-anthrylamine,  
 10,10'-diamino- 856356-85-9, Anthracene,  
 9,10-diacetamido- 856356-88-2, Anthracene,  
 9,10-bis(α-chloroformamido)- 857588-55-7,  
 9-Anthrol, 10-(10-amino-9-anthrylamino)- 857589-72-1,  
 Anthracene, 9,10-dibenzamido- 860530-96-7,  
 9,10-Anthradiol, 9,10-diamino-9,10-dihydro- 860531-57-3,

9,10-Anthracenediamine, N,N'-dibenzylidene- 873380-71-3,  
Hydroxylamine, N,N'-9,10-anthrylenebis-  
(preparation of)

L94 ANSWER 43 OF 43 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1941:25272 HCAPLUS

DOCUMENT NUMBER: 35:25272

ORIGINAL REFERENCE NO.: 35:3998d-i,3999a-i,4000a-c

TITLE: Reaction of formamide with carbonyl compounds

AUTHOR(S): Schiedt, Bruno

SOURCE: Journal fuer Praktische Chemie (Leipzig) (

1941), 157, 203-24

CODEN: JPCEAO; ISSN: 0021-8383

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

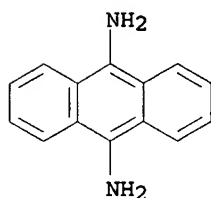
GI For diagram(s), see printed CA Issue.

AB Leuckart (Ber. 18, 2341(1885), and later papers) found that on heating ketones and aldehydes with  $\text{HCO}_2\text{NH}_4$  formyl derivs. of the corresponding amines were obtained; the mechanism of the reaction was discussed by Wallach (Ann. 269, 347(1892), and later papers). In some cases it was found that the  $\text{HCO}_2\text{NH}_4$  had a reducing action (e. g., with fluorenone (I) and anthraquinone (II)) and because of the possibility that  $\text{HCONH}_2$  (III) and not the formate was the active agent, the behavior of III has been studied. I (10 g.) and 50 cc. III, boiled for 30 min., give 8-9 g. of the formyl derivative of IV, m.  $210^\circ$ ; hydrolysis of 25 g. with 40 g. KOH in 100 cc. MeOH (boiling 30 min.) gives 15-20 g. of the HCl salt of 9-aminofluorene (IV). 1,2-Benzofluorenone yields the formyl derivative, m.  $268^\circ$ , of 9-amino-1,2-benzofluorene, m.  $151^\circ$ ; this gives a violet color to boiling concentrated  $\text{H}_2\text{SO}_4$ ; HCl salt, m.  $268^\circ$ ; picrate, yellow, m.  $245^\circ$  (decomposition); Ac derivative, m.  $282^\circ$ . 2,3-Benzofluorenone gives the formyl derivative, m.  $238^\circ$ , of 9-amino-2,3-benzofluorene, m.  $140^\circ$ ; HCl salt, m.  $261^\circ$ ; picrate, bright yellow, m.  $226^\circ$  (decomposition); Ac derivative, m.  $278^\circ$ ; benzylidene derivative, m.  $268^\circ$ . II (20 g.) and 200 cc. III, boiled 4 hrs., give 22-5 g. of the diformyl derivative (V) of VI, yellow needles from III, m.  $439^\circ$ ; boiling 5 g. of V with 2 g. AcONa in 50 cc. Ac<sub>2</sub>O until solution results gives the tetra-Ac derivative of VI, yellowish green, m.  $273^\circ$ ; solns. have a blue fluorescence. Boiling 10 g. V with 10 g. KOH in 150 cc. MeOH for 1 hr. gives the monoformyl derivative of VI, orange, m.  $292^\circ$ , which yields a yellow Ac derivative, m.  $338^\circ$  (decomposition) with Ac<sub>2</sub>O in  $\text{C}_5\text{H}_5\text{N}$ . V (10 g.) with 40 g. KOH in 100 cc. MeOH, boiled 1 hr., gives 9,10-diamino-anthraquinone (VI), red, m.  $196^\circ$ ; it is oxidized by air, giving a dark colored solution; crystallization from tetralin or Ph-NO<sub>2</sub> gives nearly black needles; the dilute AcOH solution is deep green and is decolorized with mineral acids (especially on boiling) with the formation of II. VI and PhNCO in Me<sub>2</sub>CO give the urea derivative,  $\text{C}_{28}\text{H}_{22}\text{O}_2\text{N}_2$ , yellow, m.  $312^\circ$ . Heating 10 g. of acenaphthenequinone (VII) with 150 cc. III and 5 cc. AcOH at  $170^\circ$  gives 6-7 g. of diacenaphtheneopyrazine (VIII), m.  $438^\circ$  (sulfate, orange, m.  $286^\circ$  (decomposition)). Heating 5 g. of the 5-Br derivative of VII and 100 g. III at  $180^\circ$  gives the di-Br derivative of VIII,  $\text{C}_{24}\text{H}_{10}\text{N}_2\text{Br}_2$ , red, m.  $382^\circ$ . Phenanthrenequinone (10 g.), 150 cc. III and 10 cc. AcOH, heated at  $160^\circ$  and the dark brown product crystallized from tetralin, give diphenanthreneopyrazine (phenanthrazine), bright yellow, m.  $487^\circ$ ; the concentrated  $\text{H}_2\text{SO}_4$  solution has a deep cornflower-blue color. Chrysenequinone (VIIIA) (5 g.), 100 cc. III and 5 cc. AcOH, quickly heated to  $170^\circ$ , give a nearly black precipitate; washed with Me<sub>2</sub>CO and crystallized from tetralin, this yields 1 g. of dichrysenopyrazine, yellow, m.  $418^\circ$ ; it gives a deep blue color to concentrated  $\text{H}_2\text{SO}_4$ . The III mother liquor on cooling gives a precipitate which, crystallized from AcOH, gives 0.3 g. of a product, m.  $325^\circ$ ; the AcOH mother liquor,

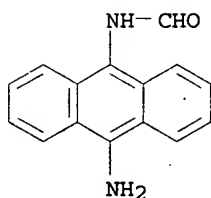
precipitated with H<sub>2</sub>O and the precipitate crystallized from C<sub>5</sub>H<sub>5</sub>N-H<sub>2</sub>O, yields dihydrodiformylchrysenopyrazine (IX), light brown, m. 190°; the concentrated H<sub>2</sub>SO<sub>4</sub> solution is pale violet-blue; addition of picric acid to IX in C<sub>6</sub>H<sub>6</sub> gives the picrate as dark yellow needles which change on standing to red-orange tables with a strong luster; both forms m. 205°. Hystazarinquinone (5 g.) and 100 cc. III at 130° give a solution and then a nearly black precipitate; after standing in AcOH-HCl for some time, it is washed with Me<sub>2</sub>CO and crystallized from quinoline, yielding lin-anthraquinonedihydroazine, dark brown rods, m. above 400°. Heating 5 g. 1,2-anthraquinone, 100 cc. III and 5 cc. AcOH at 150° gives bis-ang-dianthracenopyrazine (anthrazine), yellow brown, m. 390°; oxidation with K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> in concentrated H<sub>2</sub>SO<sub>4</sub> gives indanthrene. Alizarinquinone is not stable but alizarin blue quinone and III, heated 10 min. at 150°, the precipitate washed with dilute NH<sub>4</sub>OH and Me<sub>2</sub>CO and crystallized from quinoline, give indanthrenequinoline (X), blue glistening needles, m. above 400°. A modification of the III reaction results when the o-quinone and III are heated in the presence of an aldehyde; one of the quinone groups reacts with III to form an amine which reacts with the aldehyde to give an oxazole. VIIIA (2.5 g.), 40 cc. III and 2 cc. BzH, on heating to 160°, give a red, changing to a brown, solution and finally a mass of needles; crystallization from xylene yields 2.5 g. of 2-phenylchrysenoxazole (XI), pale yellow, m. 286°; solns. in high-boiling solvents have a blue fluorescence; the concentrated H<sub>2</sub>SO<sub>4</sub> solution is yellow-green with a strong bluish green fluorescence. From hot AcOH-H<sub>2</sub>SO<sub>4</sub> XI seps. as a yellow sulfate, which is quickly decomposed by EtOH. The following homologs of XI were prepared, using the appropriate aldehyde: p-nitrophenyl, deep yellow needles, m. 318° (the concentrated H<sub>2</sub>SO<sub>4</sub> solution is brownish red without fluorescence); m-nitrophenyl, yellow, m. 276° (the concentrated H<sub>2</sub>SO<sub>4</sub> solution is light green); 3'-hydroxy-4'-methoxyphenyl, m. 260° (the concentrated H<sub>2</sub>SO<sub>4</sub> solution is yellow-green with a bluish green fluorescence; Ac derivative, m. 225°); 3'-methoxy-4'-hydroxyphenyl, m. 240° (the dilute NaOH solution is yellow and the concentrated H<sub>2</sub>SO<sub>4</sub> solution is olive-green with a green fluorescence); 3',4'-methylenedioxyphenyl, pale yellow-green, m. 271° (the H<sub>2</sub>SO<sub>4</sub> solution is green with a bluish green fluorescence); 2-furyl, pale yellow, m. 219° (the H<sub>2</sub>SO<sub>4</sub> solution is pale yellow-green with a bluish green fluorescence); 4'-dimethylaminophenyl, yellow, m. 270° (the H<sub>2</sub>SO<sub>4</sub> solution is green with a bright yellow-green fluorescence). 2-(o'-Hydroxyphenyl)phenanthrenoxazole, m. 235° (the H<sub>2</sub>SO<sub>4</sub> solution is pale blue with a deep blue fluorescence); o'-methoxyphenyl derivative, pale yellow, m. 220° (the H<sub>2</sub>SO<sub>4</sub> solution is pale blue with a deep blue fluorescence); p'-nitrophenyl derivative, yellow, m. 272° (the H<sub>2</sub>SO<sub>4</sub> solution is brownish red without fluorescence). 1-Phenyl-3-methyl-5-pyrazolone reacts with III on heating to give a red solution from which orange needles sep. and later a felted crystal mass; extraction with EtOH gives a residue of 4,4'-methylidyne-bis[1-phenyl-3-methyl-5-pyrazolone] (XII), orange rods, m. 181°; the EtOH filtrate contains bis(1-phenyl-3-methyl-5-pyrazolonyl)methane (XIII), m. 220-5°; heating a short time at 220-5° gives XII; solution of XIII in alkali and precipitation with acid gives a XIII as thin needles which is easily soluble in MeOH (XIII is very difficultly soluble) but which at 220° is dehydrated to XII and on crystallization from MeOH-NH<sub>3</sub> gives XIII; this is a case of dimorphism or more likely of a keto and enol form. Both forms of XIII give the same Ac derivative, m. 157°. Reduction of XII with Zn and AcOH and acetylation give the Ac derivative 4,4'-Methylidynebis[3-methyl-5-pyrazolone], orange-yellow, m. 310° (decomposition); 4,4'-methylidynebis(1,3-diphenyl-5-pyrazolone), reddish yellow, m.

250°. 4,4'-Methyldynebis(1-phenyl-5-pyrazolone-3-carboxylic acid), from phenylpyrazolonecarboxylic acid and III, yellow, m. 248° (decomposition). N-Phenyloxindole and III, boiled 10 min., give methyldynebis(N-phenyloxindole), yellow-brown, m. 309°.

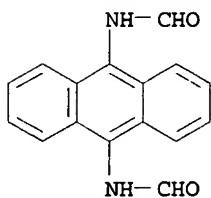
IT 53760-37-5, 9,10-Anthracenediamine  
(and derivs.)  
RN 53760-37-5 HCAPLUS  
CN 9,10-Anthracenediamine (9CI) (CA INDEX NAME)



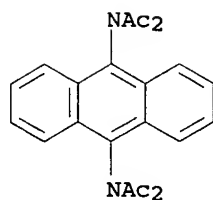
IT 6550-88-5, Formamide, N-(10-amino-9-anthryl)-  
10303-96-5, Anthracene, 9,10-diformamido-  
70352-23-7, Anthracene, 9,10-bis(diacetyl-amino)-  
856352-35-7, Anthracene, 9,10-bis(3-phenylureido)-  
(preparation of)  
RN 6550-88-5 HCAPLUS  
CN Formamide, N-(10-amino-9-anthryl)- (6CI, 7CI, 8CI) (CA INDEX NAME)



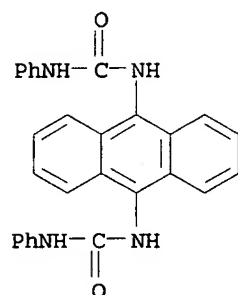
RN 10303-96-5 HCAPLUS  
CN Formamide, N,N'-9,10-anthracenediylbis- (9CI) (CA INDEX NAME)



RN 70352-23-7 HCAPLUS  
CN Acetamide, N,N'-9,10-anthracenediylbis[N-acetyl- (9CI) (CA INDEX NAME)



RN 856352-35-7 HCAPLUS  
 CN Urea, 1,1'-(9,10-anthrylene)bis[3-phenyl- (4CI) (CA INDEX NAME)



CC 10 (Organic Chemistry)  
 IT 11-Benzo[b]fluoren-9-amine, N-benzylidene-  
 11-Benzo[b]fluorene, 11-acetamido-  
 11-Benzo[b]fluorene, 11-formamido-  
 2-Pyrazoline-3-carboxylic acid, 4,4'-methylidynebis[5-oxo-1-phenyl-  
 5-Pyrazolone, 4,4'-methylidynebis[1,3-diphenyl-  
 Acenaphthazine, dibromo-  
 Acetamide, N-11-benzo[f]fluoren-11-yl-  
 Chrysenoxazole, 2-(3',4'-methylenedioxyphenyl)-  
 Chrysenoxazole, 2-(3'-hydroxy-4'-methoxyphenyl)-  
 Chrysenoxazole, 2-(3'-hydroxy-4'-methoxyphenyl)-, acetate  
 Chrysenoxazole, 2-(4'-dimethylaminophenyl)-  
 Chrysenoxazole, 2-(4'-hydroxy-3'-methoxyphenyl)-  
 Chrysenoxazole, 2-[m-nitrophenyl]-  
 Chrysenoxazole, 2-[p-nitrophenyl]-  
 Chrysenoxazole, 2-furyl-  
 Chrysenoxazole, 2-phenyl-  
 Indanthrenequinoline  
 IT 207-04-5, Acenaphthazine 53760-37-5,  
 9,10-Anthracenediamine 855168-04-6, 11-Chrysofluorenamine  
 (and derivs.)  
 IT 81-77-6, Indanthrene 211-89-2, Dichryseno[5,6-b,5',6'-e]pyrazine  
 215-14-5, Phenanthrazine 222-64-0, Anthrazine 525-03-1,  
 9-Fluorenamine 5227-65-6, Dinaphtho[2,3-b,2',3'-i]phenazine-  
 5,9,14,18-tetrone, 7,16-dihydro- 6550-88-5, Formamide,  
 N-(10-amino-9-anthryl)- 6550-88-5, 9-Anthramine,  
 10-formamido- 6638-65-9, Formamide, N-9-fluorenyl- 7149-40-8,  
 5-Pyrazolone, 4,4'-methylenebis[3-methyl-1-phenyl-, diacetyl  
 derivative 7149-40-8, 5-Pyrazolone, 4,4'-methylenebis[3-methyl-1-  
 phenyl- 10303-96-5, Anthracene,  
 9,10-diformamido- 15900-11-5, 5-Pyrazolone, 4,4'-  
 methylidynebis[3-methyl-1-phenyl- 61587-89-1,  
 Phenanthr[9,10]oxazole, 2-(p-nitrophenyl)- 70352-23-7,  
 Anthracene, 9,10-bis(diacetyl-amino)- 168777-16-0,  
 Phenol, o-phenanthr[9,10]oxazol-2-yl- 168777-16-0,  
 Phenanthr[9,10]oxazole, 2-(o-hydroxyphenyl)- 332045-13-3,  
 5-Pyrazolone, 4,4'-methylidynebis[3-methyl- 854389-29-0,



Dinaphtho[2,3-a,2',3'-h]dipyrido[3,2-c,3',2'-j]phenazine-  
5,10,16,21-tetrone, 11,22-dihydro- 854908-28-4,  
Phenanthr[9,10]oxazole, 2-(o-methoxyphenyl)- 855879-07-1,  
Acetamide, N-11-chrysofluorenyl- 856352-35-7,  
Anthracene, 9,10-bis(3-phenylureido)- 856352-35-7  
, Urea, 1,1'-(9,10-anthrylene)bis[3-phenyl- 858798-58-0,  
Formamide, N-11-benzo[b]fluoren-11-yl- 858798-96-6, Formamide,  
N-11-chrysofluorenyl- 860543-71-1, Oxindole,  
3,3'-methylidynebis[1-phenyl-  
(preparation of)

=>